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by

Garnett Picot, John Myles, Ted Wannell*

No. 28

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# GOOD JOBS/BAD JOBS AND THE DECLINING MIDDLE: 1967-1986

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Business and Labour Market Analysis Group
Analytical Studies Branch
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* The names are listed randomly, all authors contributed equally to the project. Thanks are due to Roger Love and Lars Osberg for their comments on an earlier draft of this paper.

The analysis presented in this paper is the responsibility of the authors and does not necessarily represent the views or policies of Statistics Canada.

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## Abstract

Concern about the impact of a number of structural changes in the economy on the creation of "good" and "bad" jobs (i.e., high and low paying) has surfaced in recent years. It has been argued that the shift in employment to the services sector, technological change, the changing demographic composition of the workforce, contracting out and other effects are resulting a polarization of the distribution of wages and earnings; that is, more workers and jobs at the bottom and top of the distributions and fewer in the middle.

Using data on employment earnings of full-time, full-year workers from 1967 to 1986, we examine the degree to which polarization has occured, and whether the changing age and sex composition of the work force accounts for this polarization. We find that the earnings distribution has become more polarized for this population since 1967, and that much of it remains after accounting for demographic effects. During the 1970s, after eliminating the effect of the changing age and sex mix, all of the shift was towards the top and bottom of the earnings distribution.

In the 1980's demographic effects were less pronounced, but polarization continued and if anything accelerated. The changing industrial and occupational composition of jobs (eg the shift to the services) accounts for little of the observed polarization in the 1980s. Rather, a decline in the relative wages of young people is behind much of the observed change, at least to 1986.

The degree to which the polarization of the earnings distribution is due to changes in hourly wage rates or changes in hours worked is also examined, and we find that in the 1980s, both contributed about equally to earnings polarization.



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# Good Jobs/Bad Jobs And The Declining Middle: 1967 - 1986

## Introduction

In the quarter century following World War II, rising real wage rates and high levels of employment brought rising living standards to broad sectors of the labour force and introduced "middle class" living standards to increasing numbers of working class, blue-collar, industrial workers. Rapid growth in professional, technical and managerial occupations also contributed to this development. Until the early seventies, the presumption was widespread that these trends would continue. "Good jobs" would continue to grow more quickly than "bad jobs", the result of changes in the occupational mix (more professional and technical jobs), and productivity gains that would allow real wages to go on rising. During this period of postwar expansion, the main issue among social scientists concerned with issues of inequality was not whether the pool of "good jobs" was expanding but whether access to the expanding pool of such jobs was "fair", i.e. with questions of social mobility and equality of opportunity.

Since the end of the "long boom" -- which we will date from the first OPEC oil shock in 1973 -- and particularly during the 1980s, the focus of concern has changed dramatically. There has been increased discussion of the capacity of the North American economies to continue generating the types of jobs and wages necessary to continue the rise in living standards and the expansion of a middle class life style. Whether the young can expect the jobs and wages -- and the associated life style -- available to their parents has been put into question . This view was encouraged by the rising unemployment and slowing productivity growth of the seventies -- when growth in average real wages came to a halt -- and reached its zenith during the recession of the early eighties. But even the strong and sustained economic recovery since 1983 has failed to restore the optimism of the earlier period. It has been argued by many observers (e.g. Harrison and Bluestone, 1988) that the recession of the early eighties accelerated and deepened the shift towards low-wage employment, a trend often associated with the rapid growth in the unskilled consumer service industries, growing use of part-time labour, contracting out to low-wage firms and the like.

This perception was captured most forcefully by Robert Kuttner's (1983) evocative imagery of the "declining middle class." According to Kuttner, emergent labour market trends in the United States are generating a more polarized wage distribution with more jobs clustered at the top and at the bottom. A large number of statistical analyses have addressed Kuttner's original insight with respect to the American labour market, and most have found increasing inequality and polarization in the distribution of earnings (Lovemen and Tilly, 1988). There is considerable dispute over the reasons for growing polarization in wages and earnings, however.

Our purpose in this paper is to establish the nature and extent of these trends within the Canadian labour market. Our analysis extends from 1967 to 1986, a period we have sub-divided to correspond to three distinct interludes in recent Canadian economic history[1]. The first, from 1967 to 1973, captures the final moments in the long postwar economic boom, the end of which was symbolically marked by the first OPEC oil shock in 1973. The second period, from 1973 to 1981, marks the years of "stagflation", characterized by rising unemployment, inflation, slowing productivity and declining rates of growth in real wages.

The period of stagflation was brought to a halt by the recession that began toward the end of 1981. Between 1981 and 1983, unemployment rose from 7.5% to almost 12% and total employment fell by 2.5%. After 1983, however, growth rates turned positive again and total employment levels began to rise. By 1986, total employment levels in Canada were 5.7% above the pre-recession 1981 level. These years of recession, recovery and expansion from 1981 to 1986 comprise the third and most controversial period covered by our analysis. Strong growth in total employment, a feature of both the Canadian and the American economies in the 80s, has been achieved, it has been argued, at the cost of a decline in job quality.

---

[1] The selection of the years was dictated by three considerations: (a) the availability of data from the Survey of Consumer Finances, which is not carried out every year, (b) the historical periods as described in the text, and (c) the necessity to avoid years which are at extreme positions in the business cycle (e.g. '82 or '83) since these can affect the results. Regarding the last point, both '67 and '86 are in similar position in the business cycle; both are years of relatively slow growth during an extended expansionary phase. Hence, the end points of the study period are in similar positions in the cycle. 1973 was a year of very rapid growth just before the 1974-75 recession, and 1981 was mainly a growth year between the 1980 and 1982-83 recessions. While these last two years are not in exactly similar positions in the cycle, none are in an extreme position in the business cycle which would radically affect the results.

## Major Findings

Our analysis proceeds in three parts. In the first section, we document changes in the earnings distribution of full time, full year workers for the three periods with data from the Survey of Consumer Finances. In all three periods, we find evidence of polarization in the earnings distribution, i.e. more earners in the top and the bottom and fewer in the "middle" of the distribution. In the first two periods (1967-73, 1973-81) the changing demography of the labour market, especially the growing labour force participation of women, accounted for much of the change in the earnings distribution. Net of demographic effects the shift in the earnings distribution in the middle (73-81) period was entirely towards the top. In contrast, even after accounting for the impact of demography, earnings polarization characterized the 1967-73 and especially the 1981-86 period. For this reason, in the second part of the paper, we give the recent period of recession and recovery more detailed attention. We devote some time to examining the thesis that industrial and occupational restructuring of employment are the principle motors of change underlying shifts in the distribution of wages and earnings and conclude that they account for only a modest share of the observed change. Instead, the "declining middle" in Canada during the 1980s reflects a restructuring of the economic life cycle. The disproportionate growth in low wage employment appears to be largely the result of declining relative wages paid in the youth labour market. We briefly discuss the implications of this change and whether it may be temporary or permanent.

In the third section we turn our attention to changes in **hours worked** and its impact on the earnings distribution. Earning patterns can change -- and the "middle" could decline -- because of changes in wage rates in jobs, the amount of time people work in these jobs or some combination of the two. Hypothetically, trends in the one could offset trends in the order, e.g. when wage rates decline people might work more hours to maintain traditional earnings levels. In fact, we show that over the 1981-86, period, trends in wage rates and changes in working time were in the same direction and reinforced one another: there was polarization in <u>both</u> wage rates and hours worked. The growth in low earnings was a result of both lower wage rates and fewer hours worked; the growth in high earnings reflected higher wages and longer hours worked.

## I. The Declining Middle, 1967-86

### A First Overview: The Changing Distribution of Earnings

The figures summarized in Chart 1, and presented in more detail in Table 1, provide both a first overview of the change in the earnings distribution we will be analyzing in the remainder of the paper and an opportunity to clarify some of the details necessary to interpret these and subsequent results.

As Chart 1 graphically illustrates, the shape of the earnings distribution of full-time full-year workers did change and become more polarized over this twenty-year period. There was an increase in the share of jobs both at the bottom (levels 1 and 2) and at the top (levels 9 and 10) of the earnings distribution and decline in the "middle" levels. There was a shift of 8 percentage points of all earners out of earnings levels 3 through 8 -- 4.2% to the bottom and 3.8% to the top. But what do these 10 earnings levels mean?

In the side tab of Table 1, we present dollar values for each of the ten earnings intervals. In Column 1 we show the 1967 distribution of earners and that about 10% of all earners were in each of the 10 earnings levels in 1967. To construct the earnings levels we divided the 1967 earnings distribution into ten groups of roughly equal size.[2] We then took the dollar value of earnings at each of the boundaries and inflated them by the change in the median wage earnings between 1967 and 1986 to get equivalent 1986 earnings levels.[3] If there was no change in the shape of the earnings distribution, we would find exactly the same percentage of earners in each level in 1986 as in 1967 (i.e. about 10%). The difference presented in column 5 of table 1 represents the growth or decline in the proportion of earners in each earnings level.

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[2] The fact that there is not exactly 10% of earners in each level is a result of constructing category boundaries which did not have "heaped" earnings data around a single level such as $10,000.

[3] This method is conceptually identical to the fixed ratio method (e.g. calculating the proportion of jobs below half the median, above twice the median etc.) utilized in most studies of the "declining middle." The advantage of the decile method is that it provides a larger number (10 instead of the more typical three) of wage levels making it more sensitive to changes over the whole distribution. Since all categories have approximately the same number of observations, the issue of small samples affecting some earnings levels but not others in more detailed analyses does not arise.

## Chart 1: Change in the Earnings Distribution of Full-Time Full-Year Employees, 1967-86

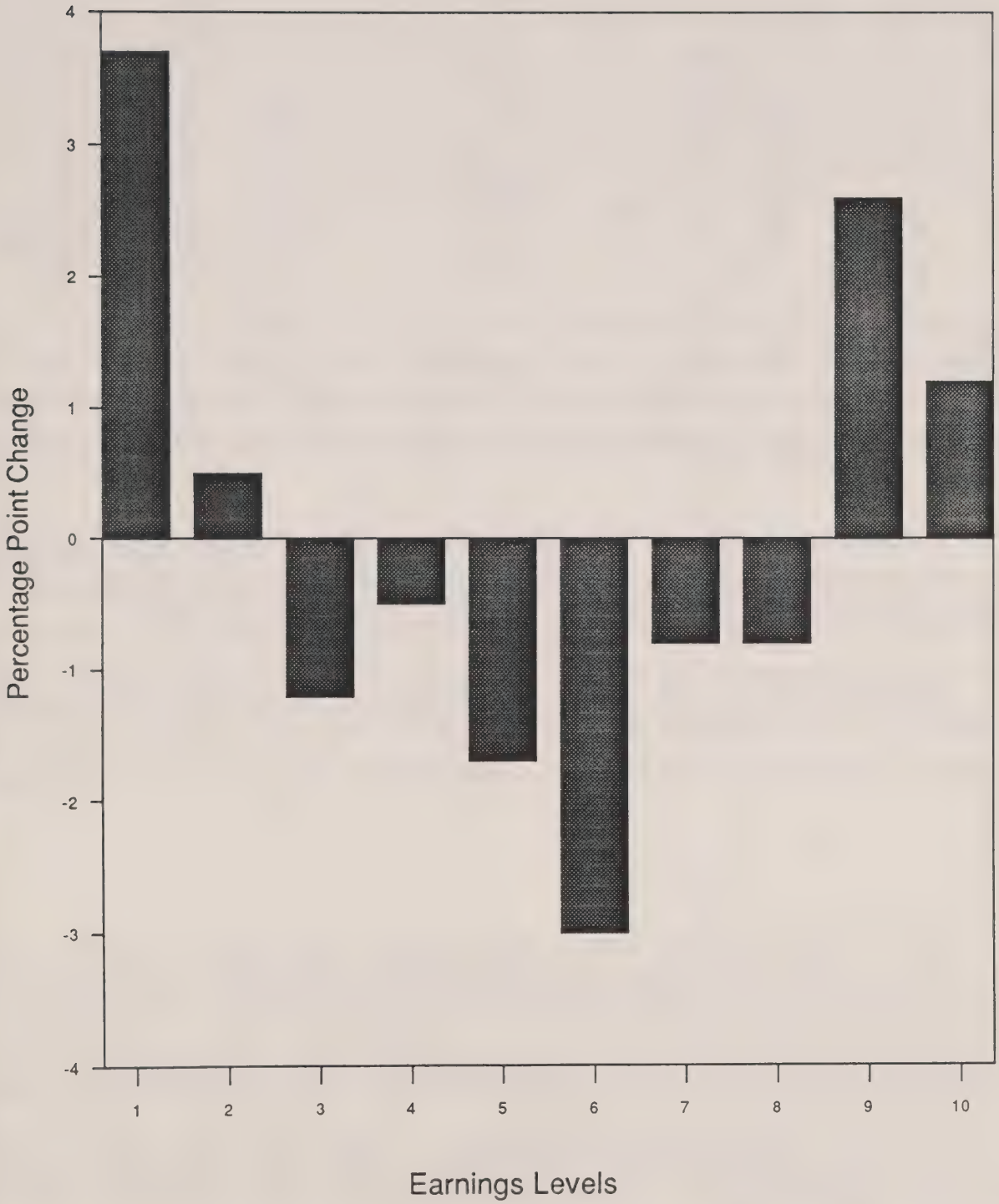

**Table 1:Change in the Earnings Distribution of Full-time Full-year Workers, 1967-86**

| Earning Level | 1986 Earnings Boundaries (thousands of $) | 1967 Distribution % | 1986 Distribution % | Change 1967-86 |
|---|---|---|---|---|
| 1 | 0 -$ 11.2 | 10.0 | 13.7 | +3.7 |
| 2 | 11.2 - 15.2 | 9.9 | 10.4 | +0.5 |
| 3 | 15.2 - 18.4 | 10.0 | 8.8 | -1.2 |
| 4 | 18.4 - 21.4 | 10.1 | 9.6 | -0.5 |
| 5 | 21.4 - 23.9 | 9.4 | 7.7 | -1.7 |
| 6 | 23.9 - 26.9 | 10.6 | 7.6 | -3.0 |
| 7 | 26.9 - 30.1 | 10.0 | 9.2 | -0.8 |
| 8 | 30.1 - 34.6 | 9.6 | 8.8 | -0.8 |
| 9 | 34.6 - 43.1 | 10.4 | 13.0 | +2.6 |
| 10 | >43.1 | 10.0 | 11.2 | +1.2 |
| Number of Workers (thousands) | | 5,305 | 8,113 | |

**Source:** Survey of Consumer Finance data adjusted by the Analytical Studies Branch to obtain comparable data over time, Statistics Canada.

The change we identify with this method is change in relative not real earnings. Our concern is to measure change in the shape of the earnings distribution (are there more earners at the top or the bottom of the distribution), not its level (have real earnings risen or fallen over time).[4]

We consider only full time, full year workers[5] because the debate on the "declining middle" is concerned with the proliferation of jobs with high or low wage rates (Kosters and Ross, 1988). Change in the distribution of annual earnings can occur because of a change in wage rates or a change

[4] To study change in the shape of the distribution, we use an earnings rather than a price deflator (such as the change in the consumer price index or CPI) to adjust earnings distributions drawn from different points in time to a common metric. In early American studies (e.g. Bluestone and Harrison, 1986), a price rather than a wage deflator was typically used and the choice of an appropriate price deflator became a topic of considerable controversy (e.g. Kosters and Ross, 1988). As Levy and others pointed out, however, this was a poor choice since it confounded the effects of pure income redistribution -- changes in the actual shape of the cross-section of earnings -- with the negative impact of stagnation in productivity on mean (or median) real earnings. The point of separating the confounding effects of redistribution and stagnation has subsequently been acknowledged and the practice followed here has become normative in these studies (see Bluestone and Harrison, 1989).

[5] Paid workers and the self-employed with earnings greater than zero working full-time full-year are included in the sample. Armed Forces personnel are also included. Sixty-six percent of all earners were full-time full- year workers in 1967, 62% in 1973 and 60% in 1981 and 1986. This group of workers, however,would account for a much larger proportion of the total hour worked in the economy.

in the distribution of hours (or weeks) worked, a matter we take up in the section III. The point is not that changes in working patterns (more part time work, less seasonal employment etc.) are unimportant. Rather, the issue is one of the underlying question we are attempting to answer. Accordingly, for the 1967-86 analysis we follow the now conventional solution and limit our attention to full time, full year earners under the assumption that any observed change in the earnings distribution for this population is a result of changes in wage rates rather than in working time.[6] We have also replicated the analysis for all earners, including part-time and seasonal workers, and find the results are somewhat different.[7] In the second part of the paper, where we turn to a more detailed analysis of the 1981-86 period we are able to make use of an alternative data base that permits a more satisfactory solution to this problem.

Our estimates of change in the shape of earnings distribution between 1967 and 1986, then, refer exclusively to changes in the relative earnings of full time, full year earners. The overall change described in Chart 1 and Table 1, however, are not particularly illuminating: they tell us little about when these shifts occurred, to whom or why. In the following sections we attempt to address these questions.

**Canada's Declining Middle: Three Periods of Change**

Determining the precise period in which the gross changes in Table 1 occurred is important for any assessment of their significance. If most of the change occurred at the beginning of the period and there has been little change since, we are likely to treat the overall shift as a matter of historical but not contemporary interest. On the other hand, if the trend is accelerating in recent years it becomes a more pressing matter.

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[6] Norwood (1987) argued that processes that govern the year to year movements of at least voluntarily part time and seasonal workers in and out of employment are qualitatively different than those that characterise the behaviour of full time, full year workers and should be treated separately.

[7] On balance there was less polarization and more movement toward the top among all earners in the first two periods and sharp polarization only in 1981-86 period. There are two reasons for these differences a difference in the metric used and underlying changes in the distribution of working time. The metric for all earners includes a much higher proportion of low earners making upward movement more likely. The impacts of changes in the distribution of working time are almost impossible to assess. There has been a secular decline in seasonal employment and a corresponding rise in part-time employment and a corresponding rise in part-time employment. Part-time and seasonal employees may be receiving higher relative wages today than in the sixties, or they may be working more hours per week or more weeks during the year. Our data only allow us to disentangle these effects in the third period we consider.

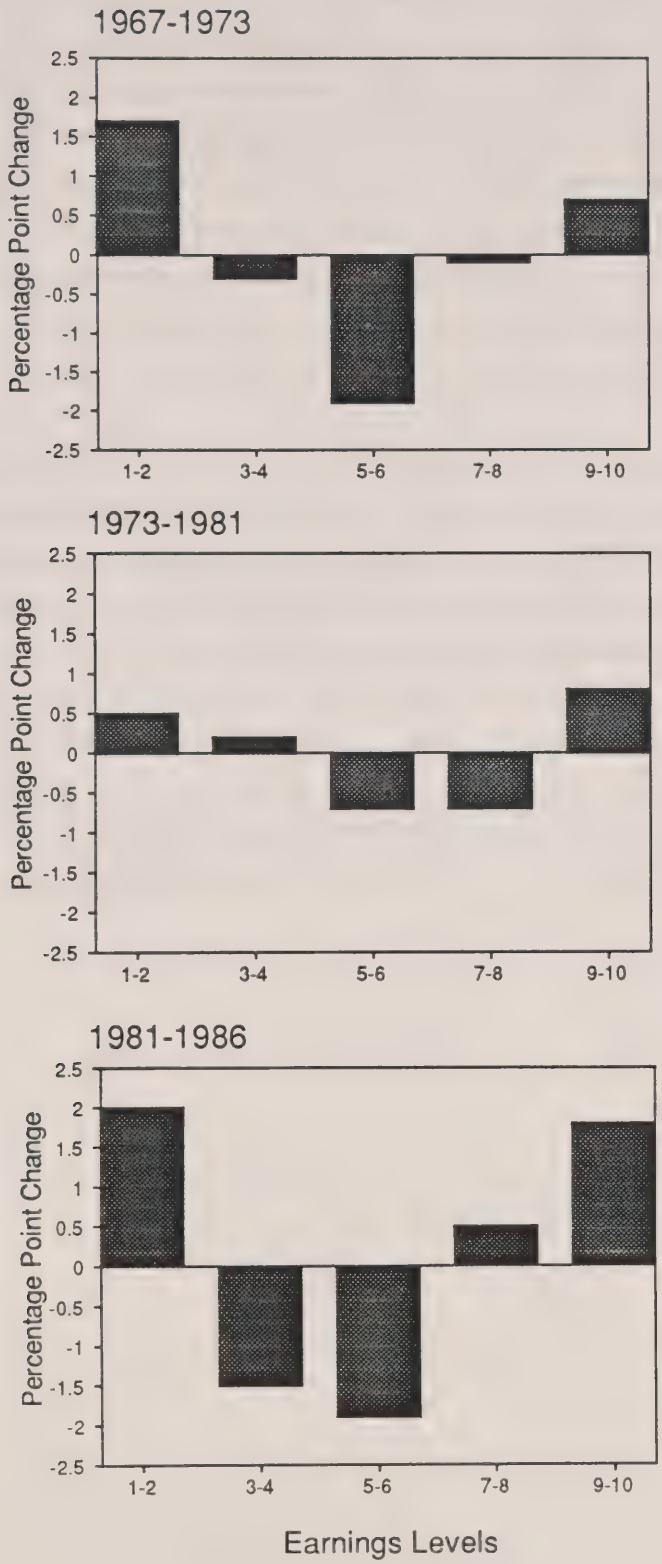
In Chart 2 we show the change in the earnings distribution for 1967-73, 1973-81 and 1981-86.[8] The underlying numbers for Chart 2 are presented in Table 2. The pattern for all three periods is similar -- offsetting shifts into the bottom and into the top of the distributions with a corresponding decline in the share of earners in the middle levels. The magnitude of the change varied among the periods however. As measured by the index of dissimilarity (a measure of the overall change in the distribution) there was a somewhat larger change between 1981 and 1986 than in the earlier periods.

**Table 2. Change in Earnings Distribution for Selected Periods Between 1967 and 1986. FTFY Earners.**

| | 1967-73 | | 1973-81 | | 1981-86 | |
|---|---|---|---|---|---|---|
| Earning Level | Dist_ 1967 | Change 67-73 | Dist_ 1973 | Change 73-81 | Dist_ 1981 | Change 81-86 |
| 1 | 10.0 | 0.4 | 10.0 | +1.9 | 10.0 | 2.0 |
| 2 | 9.9 | +2.1 | 10.0 | -1.4 | 10.0 | 0 |
| 3 | 10.0 | +0.3 | 10.0 | -0.6 | 10.0 | -1.2 |
| 4 | 10.1 | -0.6 | 9.9 | +0.9 | 9.8 | -0.1 |
| 5 | 9.4 | -0.8 | 10.1 | -0.7 | 10.2 | -0.3 |
| 6 | 10.6 | -1.1 | 10.0 | 0.1 | 10.0 | -1.6 |
| 7 | 10.0 | -0.7 | 10.0 | -0.9 | 9.9 | +0.3 |
| 8 | 9.6 | +0.6 | 10.0 | +0.2 | 10.1 | -0.8 |
| 9 | 10.4 | +0.4 | 10.0 | +0.6 | 10.0 | +1.0 |
| 10 | 10.0 | +0.3 | 10.0 | +0.2 | 10.0 | +0.8 |
| Number of Workers (Millions) | 5,305 | | 6,162 | | 7,531 | |
| Index of Dissimilarity | | 3.6 | | 3.6 | | 4.1 |

[8] To ensure comparability among periods approximate deciles are computed for the earnings distribution at the beginning of each period. Because of this rebasing of the distributions at the start of each period the sum of the change over the three periods does not equal the total change observed over the 1967-86 period reported in Table 1.

## Chart 2: Change in Earnings Distributions of FTFY Workers for Three Periods



Among the reasons we might observe such shifts is a change in the demographics of the labour market. Robert Lawrence (1984), for example, has argued that much of the growth at the bottom of the earnings distribution in the Unites States is a result of the "baby boom" -- i.e. large numbers of new labour market entrants who tend to depress the overall earnings profile. Table 3 shows that as the baby boom entered the labour force during the late 60s and early 70s, the share of workers in the 15-24 age group rose. During the middle and late 1970s, however, this share began to fall as the baby-boom generation was aging, and a generation with smaller numbers followed behind them. Since young workers tend to earn less than older workers, it is likely that the resulting change in age composition was partly responsible for changes in the earnings distribution in the first but not in subsequent periods.

There has also been a massive increase in the labour force participation of women since the sixties (Table 3). Women tend to earn less than men even within similar occupations and industries. Hence, we can expect some change in the shape of the earnings distribution in any period when the sex composition of the labour force changes. Our purpose here is not to explain this "gender gap" but to identify its impact on the shape of the earnings distribution.

**Table 3:** Women and Youth as a Proportion of Total Employment, Selected Years

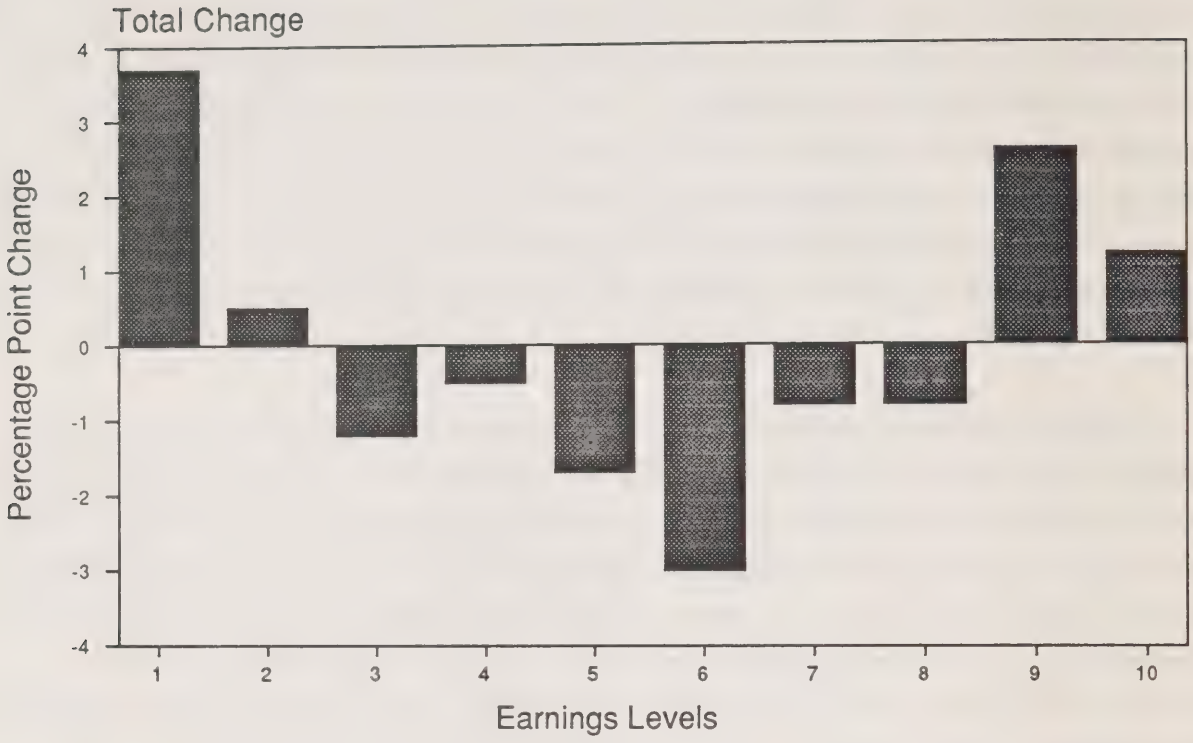
| | Youth (15-24) Percent of Total empl. | Percentages point change | Females as a Percent of total empl. | Percentage point change |
|---|---|---|---|---|
| 1967 | 24.6 | | 32.0 | |
| 1973 | 26.6 | +2.0 ('67-'73) | 35.8 | +3.8 ('67-'73) |
| 1981 | 24.2 | -2.4 | 40.3 | +4.5 |
| 1986 | 20.5 | -3.7 | 43.0 | +2.7 |

To determine the impact of changing demographics, a decomposition technique described in the appendix is used. For each earnings level, the change is decomposed into that due to the change in the age or sex distribution of earners and that due to change in the earnings distribution within each age or sex group.[9] Since women earners also tend to be younger than male earners, the effect of changes in sex composition has embedded in it some of the effect of the changing age composition and vice versa. To take account of this potential lack of independence, we also estimate the joint effect of age and sex. The results, however, indicate that the effect of changes in the age and sex composition are fairly independent, since the sum of the two effects (assuming independence) are just about equal to the sum of the effects taken jointly. The results of this standardization procedure for the entire period from 1967-86 are presented in Table 4 and summarized in Chart 3.

Over the entire time period (1967-86), increased use of female labour resulted in a substantial downward shift in the earnings distribution (Table 4, column 1) while changes in age composition produced a modest increase in the top half of the distribution (column 2). The effects of the changing age and sex composition tended to offset one another but overall "demography" did account for a substantial share of the growth in the bottom of the earnings distribution (column 3). Net of these demographic changes (column 5), there was more movement toward the top (6.2% in levels 9 and 10) than toward the bottom (2.7% in level one). This is shown in chart 3 which displays the change in the earnings distribution before and after the demographic effects are removed . The pattern of change for the whole period could still be characterized as one of polarization even after accounting for change in the age and sex composition of the labour force.

[9] Four age classes were used in the analysis: 15-24, 25-34, 35-49, 50+

## Chart 3: Change in the Earnings Distribution of Full-Time Full-Year Employees, 1967-86



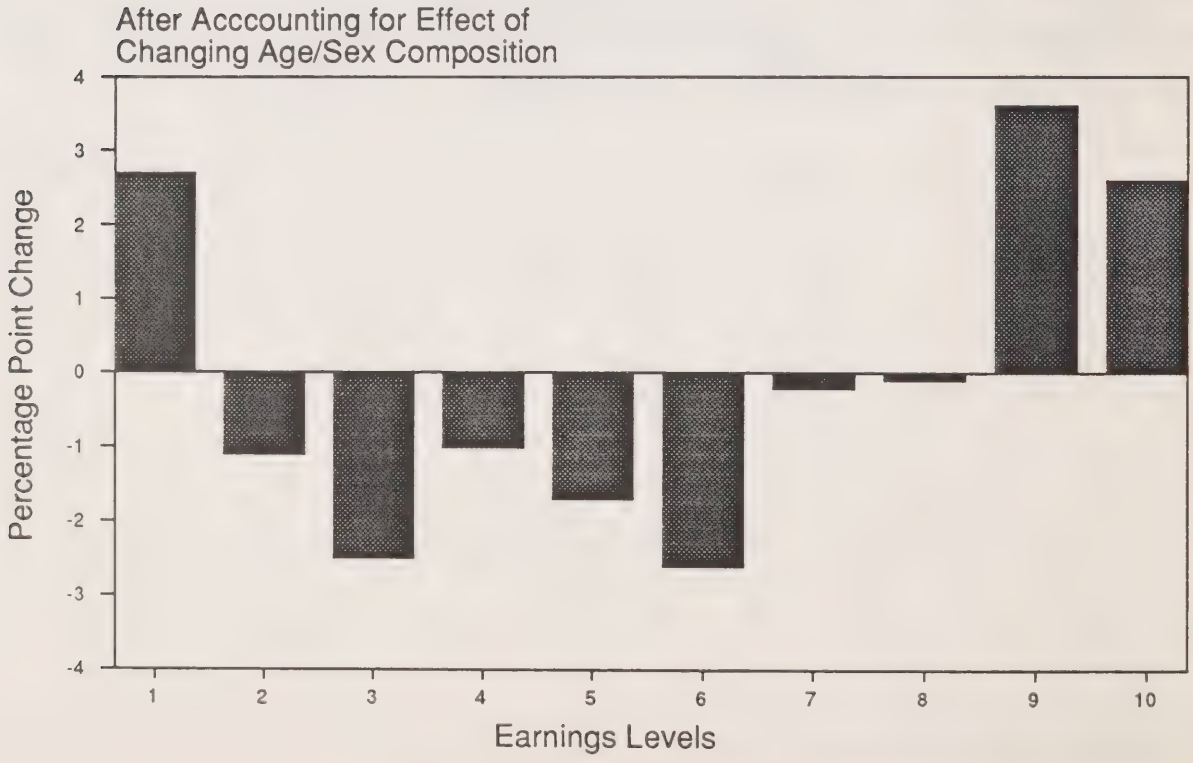



**Table 4.** **The Change in the Earnings Distribution Due to the Changing Age and Sex Composition of Earners, 1967-86, FTFY Earners Only**

| Earnings Level | Change in the Distribution Due to: 1 Changing Sex Composition Alone | 2 Changing Age Composition Alone | 3 Age & Sex Composition Combined | 4 Total Change in the Earnings Distribution | 5 Change left after Standardizing for Changing Age/Sex Composition |
|---|---|---|---|---|---|
| 1 | +1.7 | -0.8 | +1.0 | +3.7 | +2.7 |
| 2 | +2.2 | -0.8 | +1.6 | +0.5 | -1.1 |
| 3 | +1.5 | -0.5 | +1.3 | -1.2 | -2.5 |
| 4 | +0.6 | -0.2 | +0.5 | -0.5 | -1.0 |
| 5 | -0.2 | 0 | 0 | -1.7 | -1.7 |
| 6 | -0.7 | +0.3 | -0.4 | -3.0 | -2.6 |
| 7 | -1.0 | +0.5 | -0.6 | -0.8 | -0.2 |
| 8 | -1.1 | +0.6 | -0.7 | -0.8 | -0.1 |
| 9 | -1.4 | +0.7 | -1.0 | +2.6 | +3.6 |
| 10 | -1.5 | +0.3 | -1.4 | +1.2 | +2.6 |
| Index of dissimilarity | 6.0 | 2.4 | 4.3 | 8.0 | 9.0 |

Table 5. **The Change in the Earnings Distribution Due to the Changing Age and Sex Composition of Earners, 1967-73, FTFY Earners Only**

| Earnings Level | Change in the Distribution Due to: 1 Changing Sex Composition Alone | 2 Changing Age Composition Alone | 3 Age & Sex Composition Combined | 4 Total Change in the Earnings Distribution | 5 Change left after Standardizing for Changing Age/Sex Composition |
|---|---|---|---|---|---|
| 1 | +0.4 | -0.1 | +0.2 | -0.4 | -0.6 |
| 2 | +0.5 | -0.1 | +0.3 | +2.1 | +1.8 |
| 3 | +0.4 | 0 | +0.4 | +0.3 | -0.1 |
| 4 | +0.1 | 0 | +0.1 | -0.6 | -0.7 |
| 5 | 0 | 0 | +0.1 | -0.8 | -0.9 |
| 6 | -0.2 | +0.1 | 0 | -1.1 | -1.1 |
| 7 | -0.2 | +0.1 | -0.1 | -0.7 | -0.6 |
| 8 | -0.3 | +0.1 | -0.2 | +0.6 | +0.8 |
| 9 | -0.3 | +0.1 | -0.3 | +0.4 | +0.7 |
| 10 | -0.4 | -0.1 | -0.5 | +0.3 | +0.8 |
| Index of dissimilarity | 1.4 | 0.4 | 1.1 | 3.6 | 4.0 |

**6. The Change in the Earnings Distribution Due to the Changing Age and Sex Composition of Earners, 1973-81, FTFY Earners Only**

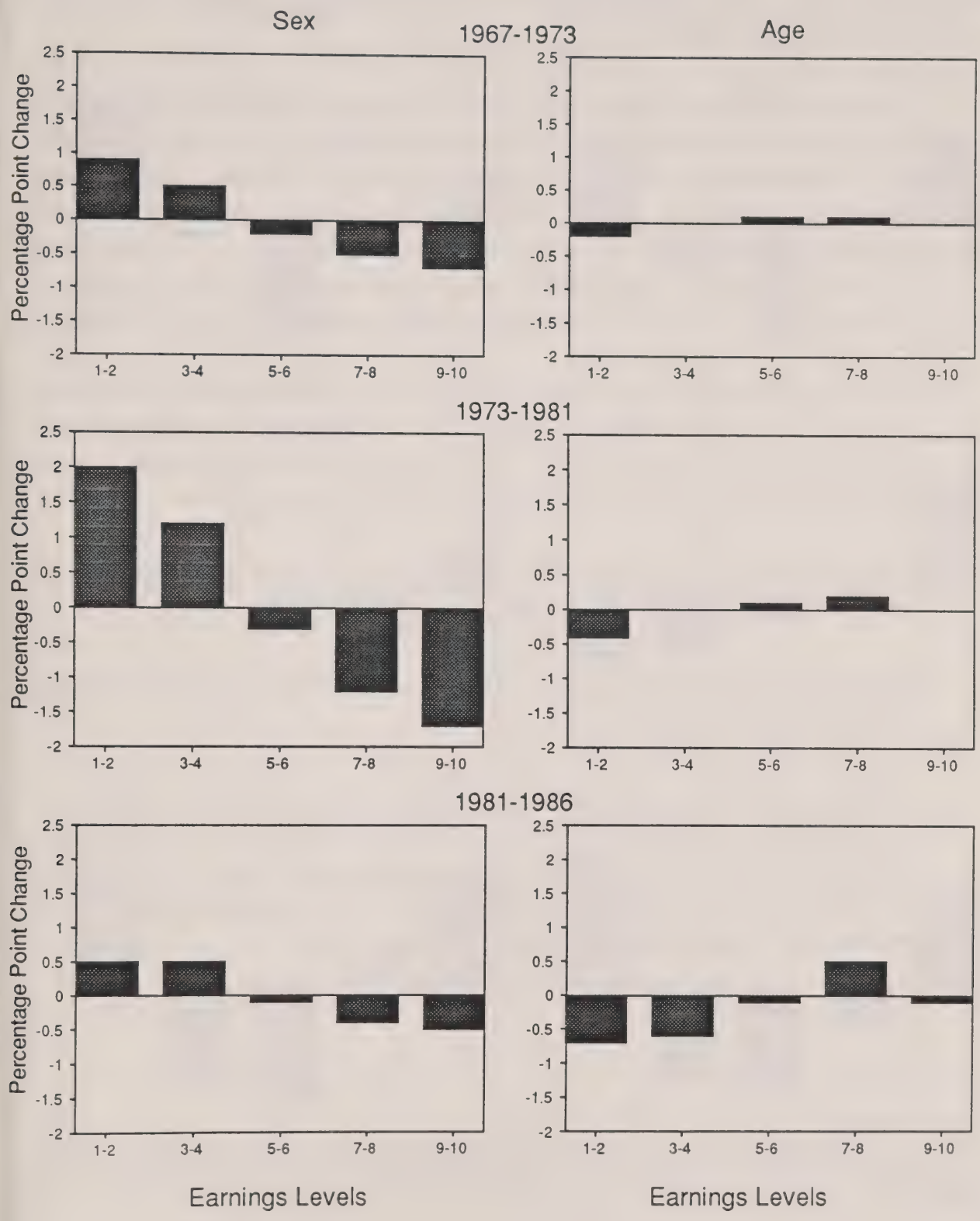
| gs | Change in the Distribution Due to: 1 Changing Sex Composition Alone | 2 Changing Age Composition Alone | 3 Age & Sex Composition Combined | 4 Total Change in the Earnings Distribution | 5 Change left after Standardizing for Changing Age/Sex Composition |
|---|---|---|---|---|---|
| 1 | +0.9 | -0.2 | +0.7 | +1.9 | +1.2 |
| 2 | +1.1 | -0.2 | +0.9 | -1.4 | -2.3 |
| 3 | +0.8 | 0 | +0.8 | -0.6 | -1.4 |
| 4 | +0.4 | 0 | +0.4 | +0.9 | +0.5 |
| 5 | 0 | 0 | 0 | -0.7 | -0.7 |
| 6 | -0.3 | +0.1 | -0.2 | -0.1 | +0.1 |
| 7 | -0.5 | +0.1 | -0.4 | -0.9 | -0.5 |
| 8 | -0.7 | +0.1 | -0.6 | +0.2 | +0.8 |
| 9 | -0.8 | +0.1 | -0.7 | +0.6 | +1.3 |
| 10 | -0.9 | -0.1 | -1.0 | +0.2 | +1.2 |
| of ilarity | 3.2 | 0.5 | 2.8 | 3.6 | 5.0 |

Table 7. **The Change in the Earnings Distribution Due to the Changing Age and Sex Composition of Earners, 1986, FTFY Earners Only**

| Earnings Level | Change in the Distribution Due to: 1 Changing Sex Composition Alone | 2 Changing Age Composition Alone | 3 Age & Sex Composition Combined | 4 Total Change in the Earnings Distribution | 5 Change left after Standardizing for Changing Age/Sex Composition |
|---|---|---|---|---|---|
| 1 | +0.2 | -0.3 | -0.1 | +2.0 | +2.1 |
| 2 | +0.3 | -0.4 | -0.1 | 0 | +0.1 |
| 3 | +0.3 | -0.4 | -0.1 | -1.2 | -1.1 |
| 4 | +0.2 | -0.2 | 0 | -0.1 | -0.1 |
| 5 | 0 | -0.1 | -0.1 | -0.5 | -0.4 |
| 6 | -0.1 | 0 | -0.1 | -1.6 | -1.6 |
| 7 | -0.2 | +0.2 | 0 | +0.4 | +0.4 |
| 8 | -0.2 | +0.3 | +0.1 | -0.9 | -1.0 |
| 9 | -0.2 | +0.4 | +0.2 | +1.0 | +0.8 |
| 10 | -0.3 | -0.5 | -0.8 | +0.8 | 0 |
| Index of dissimilarity | 1.0 | 1.4 | 0.3 | 4.1 | 4.1 |

When we consider the timing of these demographic effects, however, several additional important conclusions emerge (Chart 4 and Tables 5-7). First, in none of the three periods does the change in age composition account for growth at the bottom of the earnings distribution. And only in the most recent period are the effects of the changing age mix in any way substantial. These results are not surprising in the latter two periods when the share of employment held by the youngest age group was falling. But even in the 1967-73 period, when the share of employment held by young workers was rising, the effect of the changing age mix was, on balance, to shift the earnings distribution modestly upward. Results not shown here indicate this is because of our focus on full time, full year workers. Many young workers are in part time and seasonal jobs. For the 1967-73 period (but not in subsequent years), changes in the age mix did have the expected (though modest)

## Chart 4: Change in Earnings Distributions due to the Change in Composition of FTFY Workers by Age and Sex



downward effect on the earnings distribution when all earners were included. Nevertheless, there is scant evidence here to support the view that the growth in low wage jobs can be attributed to the entry of large numbers of young workers.[10]

In contrast, the increase in the female share of employment contributed to the increase in earners in the bottom half of the earnings distribution in all three periods. However, most of the impact of changes in sex composition were concentrated in the 1973-1981 period. Although female employment continued to rise in the 80s, the impact of this on the shape of the earnings distribution was quite modest. The increase in the female share of employment produced a net shift from the top to the bottom half of the earnings distribution of 1.4 percentage points in the 1967-73 period, 3.2 percentage points between 1973 and 1981, but only 1 percentage point between 1981 and 1986.

The third main conclusion from the period specific analyses is that the general results for the 1967-86 period as a whole conceal important differences between the periods. These differences are most clearly evident when we compare the change in the earnings distribution in graphic form (Chart 5) before and after removing the effects of changes in sex and age composition.

1/ In the 1963-73 period, there was some polarization of the earnings distribution net of the effects of changes in age and sex composition.

2/ Net of demographic changes, <u>all</u> of the movement in the 1973-1981 period was into the top of the earnings distribution.

3/ In sharp contrast, there was a marked polarization of earnings between 1981 and 1986, net of demography, and growth at the bottom (2.1 percentage points in levels 1 and 2) was, if anything, somewhat greater than at the top (1.9 percentage points in levels 7 to 10). Moreover, relative to the preceding period, changes in age and sex composition accounted for comparatively little of the total change and were largely offsetting.

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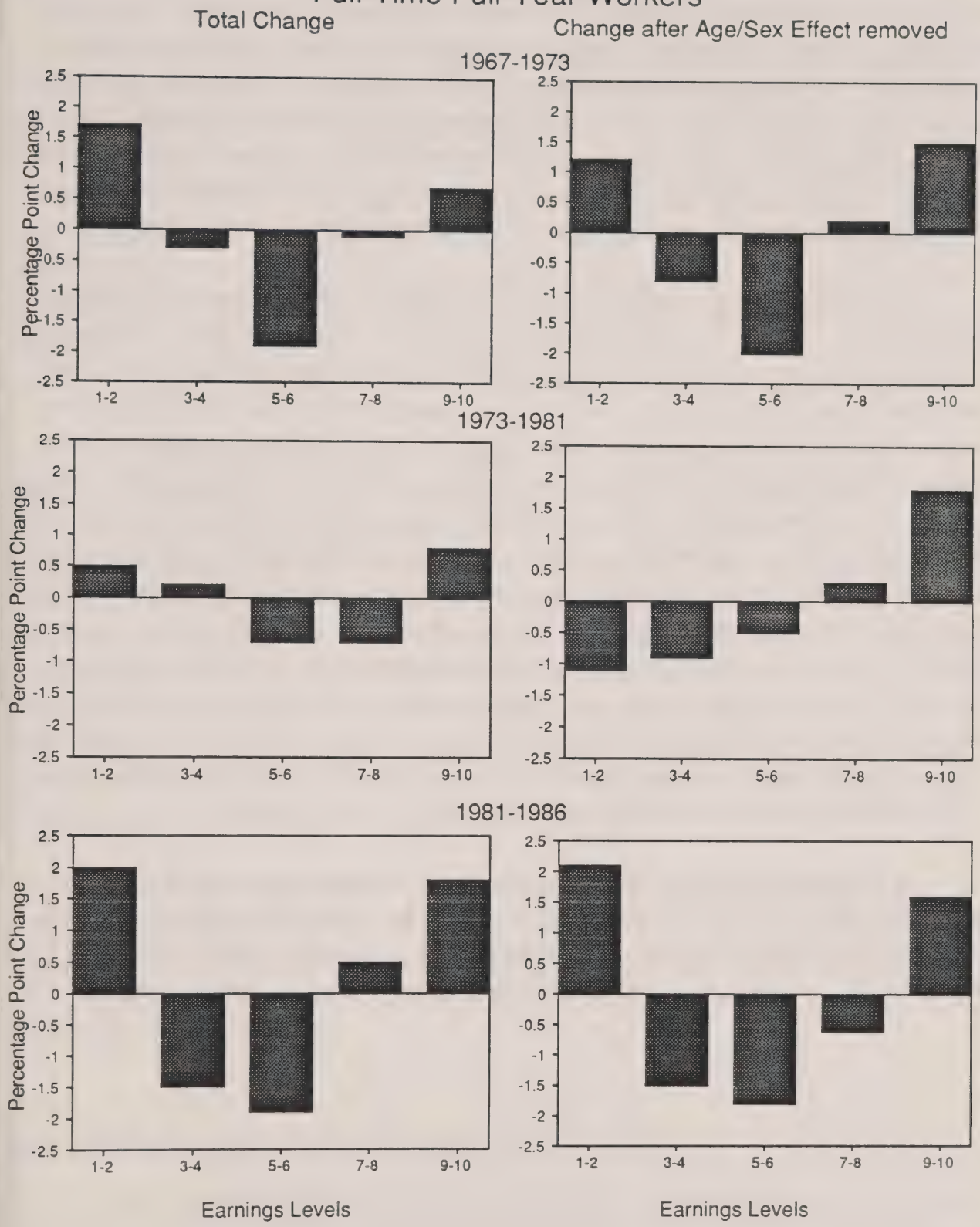
[10] We refer here only to the compositional effects of changes in age structure on the distribution of earnings. In part two, we consider the role of changes in the wage rates paid within age categories which may also be affected by the size of these categories.

# Chart 5: Change in Earnings Distributions for Full-Time Full-Year Workers



Gathering these results together suggests the following. In the absence, of changing demographics, and particularly increasing employment of less expensive female labour, much of the polarization observed in the earnings distribution over the 1967-81 period would not have occurred. Indeed, net of demography, trends in the earnings distribution until the 80s would have produced a modest increase in the share of employment at the high end of the distribution. These results raise two questions to be answered. First, what do the "demographic" effects of the pre-1981 period really represent? And second, why does the polarization in earnings continue and even become accentuated in the eighties after the effects of changing labour market demography are largely exhausted?

The answer to the first question lies largely in our ability to unravel the puzzle of the persistent gender gap in the earnings of men and women, a task beyond the scope of this paper. In the absence of this gap, the rising share of employment held by women would not affect the shape of the earnings distribution. Female earners tend to be younger than male earners but as we have shown, this does not account for the impact of changing female employment levels we have observed here. Women also tend to enter different occupations and industries than men, especially the low paying consumer service industries that were expanding over this entire period. Our ability to analyze the impact of changes in industry and occupational composition with these data is constrained by data quality and discontinuity in coding practices. However, the analysis we did conduct within these constraints indicated that changes in industrial and occupational composition had very little to do with the observed pattern of change, i.e. almost all change took place within industries and occupations. Hence, the change in gender composition is not a surrogate for some other underlying trend. Rather, since women employed on a full time, full year basis earn less than equivalent males in similar industries and occupations, the combination of the gender gap in earnings and the increasing employment of female labour over this period resulted in an increase in the share of earners with low relative earnings.

In the eighties, however, the rate of growth in female employment has been more modest than in the seventies and has had a negligeable impact on the shape of the earnings distribution. Nevertheless, polarization in earnings has continued and even accelerated somewhat. To establish the reasons for this, we subject this recent period to more intense scrutiny in part two of the paper.

## II. Recession and Recovery: Changing Wage Rates in Jobs, 1981-86[11]

The increased attention given to the issue of job quality in the eighties in both Canada and the U.S. is in large measure due to the success of these economies in generating large numbers of new jobs (Loveman and Tilly, 1988). While total employment growth in the major European economies has been close to zero, despite recovery, both North American economies have been generating large numbers of new jobs for over half a decade now. The contention of the "declining middle" theorists, however, has been that quantity has been achieved at the price of quality, at least in terms of wage rates. "Job quality" may mean many things (skill content, work autonomy, occupational safety) but the main concern has been with the wage rates paid in jobs. Two different scenarios of employment growth have been used to argue that the jobs created in Canada (and the U.S.) in the 1980s are either predominantly "poor" jobs paying low wages or, alternatively, "good" jobs paying high wages.

The "poor" jobs scenario looks to employment growth in different industrial sectors for its rationale. It is pointed out that jobs in services pay less on average than jobs in the goods-producing sector (which they do) and that employment is growing faster in services than in goods production (which it is). In particular, attention has been directed towards the rapid growth in the very low paying consumer services sector, which includes retail trade, food and accommodation, amusement, recreational and personal services. This trend was accelerated by the recession of 1981-83. As is usual, manufacturing firms shed considerable labour during the recession but also used the recession as an occasion for restructuring. When the economy recovered, production in manufacturing resumed at lower levels of total employment and by 1986 manufacturing employment levels at 1.99 million workers were below the pre-recession levels of 2.12 million workers 1981. By 1988 the manufacturing workforce at 2.10 million had still not returned to the 1981 level.

The "good' jobs scenario focuses on job growth in different occupations. It is pointed out that job growth in managerial, professional and technical occupations has been much more rapid than in other occupations -- which is true -- and that these jobs pay more on average than other kinds of jobs -- which is also true.[12] Hence, the conclusion is that the jobs being created are high quality and generally pay high wages.

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[11] This section draws on a much more extensive analysis presented in on earlier paper, J. Myles, G. Picot, T. Wannell. Wages and Jobs Research Paper #17, Analytical Studies Branch, Statistics Canada.

[12] For example, drawing on Statistics Canada data, the Canadian Labour Market and Productivity Centre (1988:22) reports that 86.3 percent of net employment growth was in managerial, professional and technical occupations between 1981 and 1987.

Both conclusions can be reached using exactly the same data for the same time period. How can these two apparently reasonable arguments lead to such different conclusions? It may be that both the "poor" jobs and the "good" jobs scenarios are partially correct -- each observing part of the elephant, as it were. Industrial restructuring may be driving the expansion of low paying jobs while occupational restructuring within industries is simultaneously increasing high paying jobs -- resulting in greater wage polarization. It may also be that both are wrong. There are many forces that impinge on the wage distribution and changes in industry and occupational composition are just two of them. All industries and occupations contain both high paying and low paying jobs and, by themselves, changes in industry and occupation mix tell us nothing about where in the wage (or salary) hierarchy jobs are being added or lost.

To answer questions about the effects of changes in industry or occupational mix on job quality, it is necessary to study wage rates in jobs rather than the earnings of individuals. Annual earnings, even for full time, full year workers, are a weighted combination of the wage rates and hours worked in all jobs held in the course of a year, jobs that may span several industries and/or occupations[13]. Two special surveys conducted by Statistics Canada, the Labour Market Activity Survey covering 1986 and the Survey of Work History covering 1981, which provided data on jobs held, wages (or salaries) paid and hours worked by respondents over the course of a year allow us to study jobs and the hourly wage (or equivalent salary) rate paid in those jobs instead of individuals and their earnings. In addition, we are no longer constrained to examining only full time, full year workers. All jobs reported by all paid workers were converted into full-time full-year equivalent (FTE) jobs by a weighting procedure in which an FTE job was defined as 2080 hours (a full year job at 40 hours per week). Hence, it may take two or three part-time jobs to make one FTE job. These FTE jobs were divided into 10 wage categories following the same procedures described above for our earnings analysis.[14]

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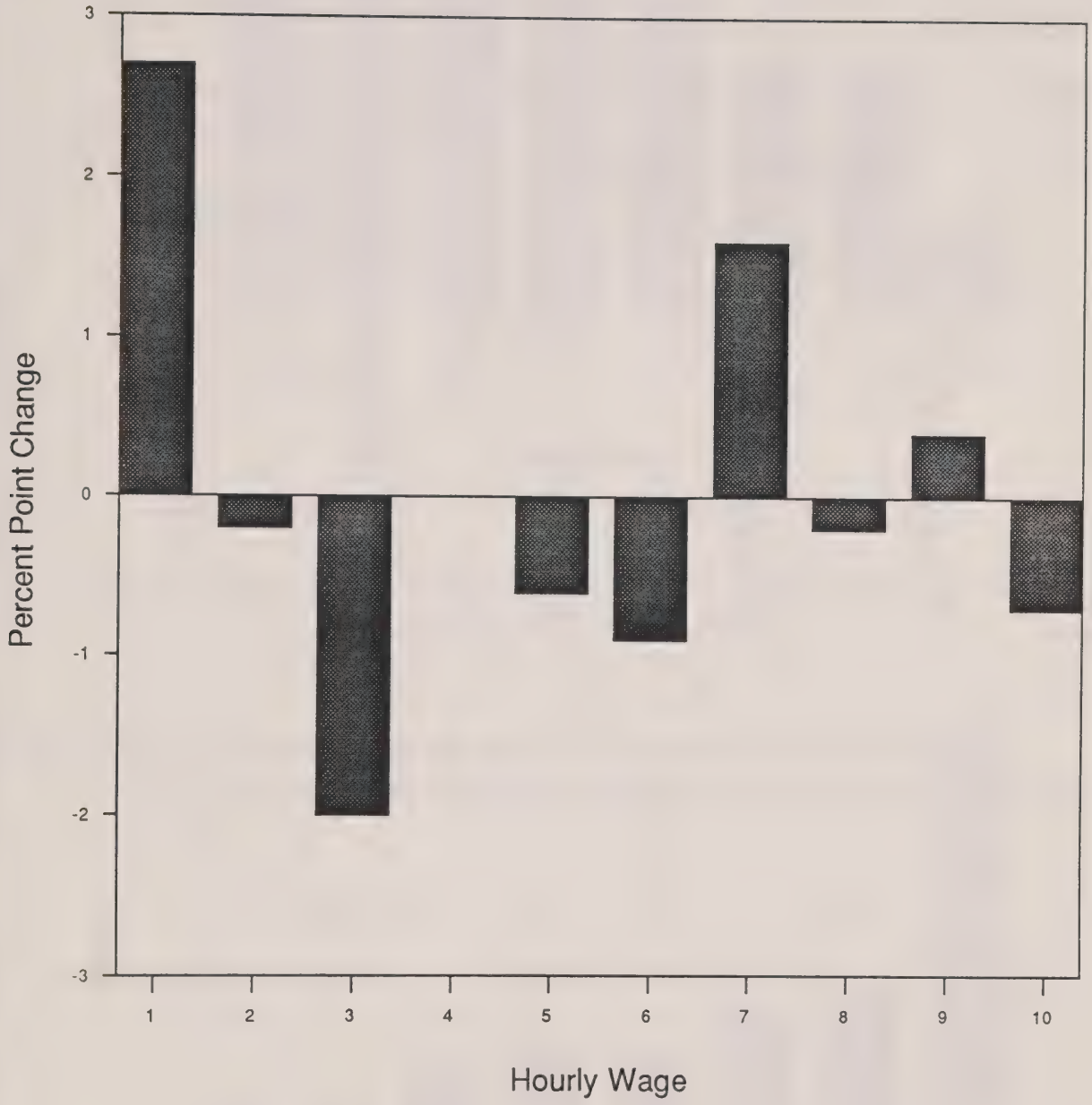
[13] In the usual Survey of Consumer Finance or census data collection procedure, this problem is compounded by the fact that the occupation and industry is reported for the time of the survey (or census) while earnings are reported for the previous calendar year.

[14] For a full description of the procedures followed see Myles, Picot and Wannell (1988).

CHART 6 : Change in the Distribution of Full-Time Equivalent Jobs by Hourly Wage, 1981-86



Changes in the distribution of wage rates in jobs (Chart 6 and Table 8) were similar, though not identical, to the change in the earnings distributions examined previously. There were two pockets of above average job growth in the wage distribution. First, in the lowest wage category (with pay below $5.24 per hour in 1986) the number of jobs rose by 275,000. Second, in the higher categories (paying between $11.87 and $19.47) employment rose by almost 250,000. Most of this growth in high paying jobs was concentrated in wage category seven rather than at the very top[15]

**Table 8. Net Change in Full-time Equivalent Jobs by Wage Level, Canada, 1981-1986**

| Wage Level[16] | FTE jobs | | Net Change | Distribution | | Changes 1981-1986 |
|---|---|---|---|---|---|---|
| | 1981 | 1986 | | 1981 | 1986 | |
| | '000 | '000 | '000 | % | % | % points |
| 1 | 821 | 1,096 | 275 | 9.4 | 12.1 | 2.7 |
| 2 | 827 | 836 | 9 | 9.4 | 9.2 | -0.2 |
| 3 | 918 | 767 | -151 | 10.5 | 8.5 | -2.0 |
| 4 | 884 | 914 | 30 | 10.1 | 10.1 | 0.0 |
| 5 | 896 | 875 | -21 | 10.2 | 9.6 | -0.6 |
| 6 | 898 | 845 | -53 | 10.2 | 9.3 | -0.9 |
| 7 | 784 | 947 | 163 | 8.9 | 10.5 | 1.6 |
| 8 | 966 | 982 | 16 | 11.0 | 10.8 | -0.2 |
| 9 | 963 | 1,030 | 67 | 11.0 | 11.4 | 0.4 |
| 10 | 807 | 767 | -40 | 9.2 | 8.5 | -0.7 |
| Total (thousands) | 8,764 | 9,059 | 296 | | | |

In the following section, we take up the role of industrial restructuring -- the shift of employment from goods production to the service industries -- in producing this change.

[15] This suggests that growth in earnings levels 9 and 10 (reported earlier)was a result of both higher wages and more working hours, a conclusion we verify in section III later.

[16] The wage levels in 1986 were <$5.24, $6.76, $7.97, $9.22, $10.43, $11.87, $13.55, $15.58, $19.41.

CHART 7 : Percent of FTE Jobs in the Top Three Wage Levels by Industrial Sector, 1986

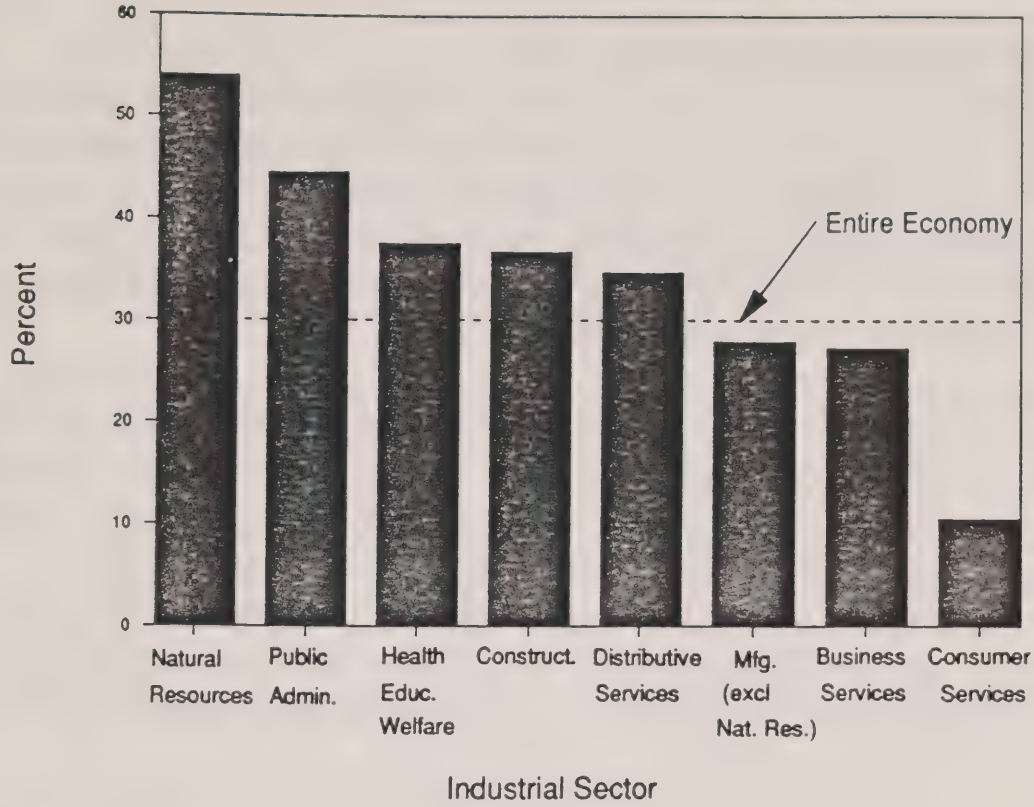
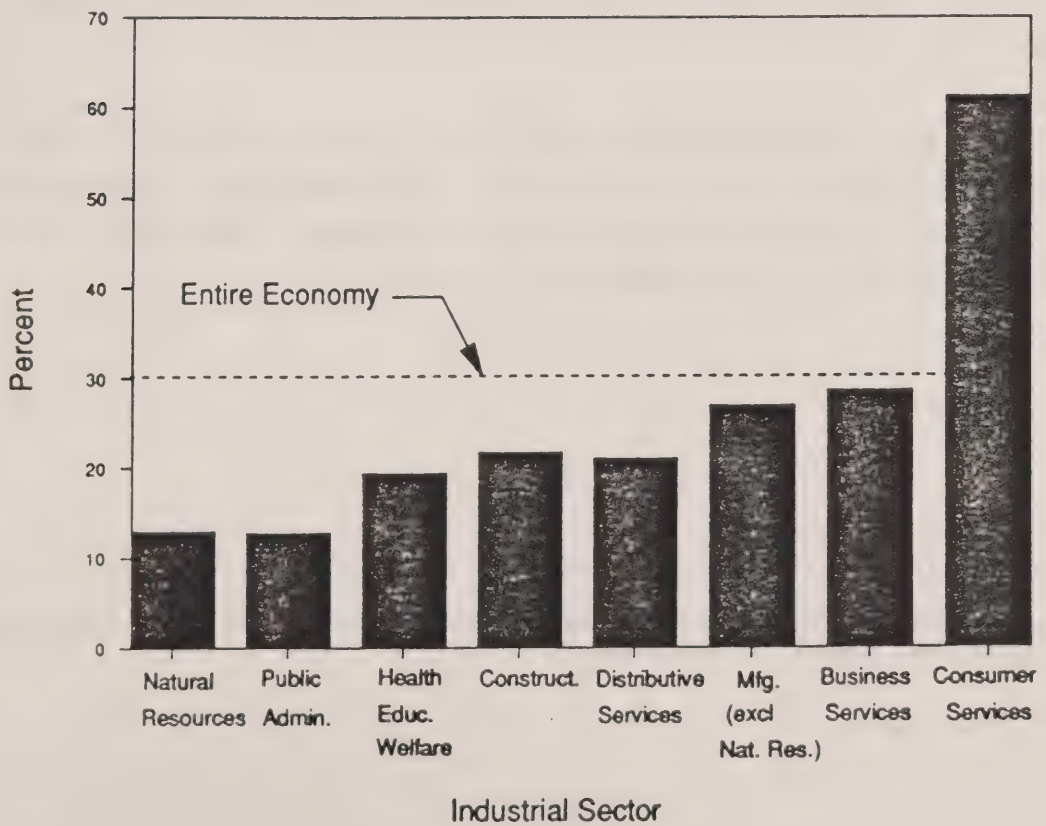



CHART 8 : Percent of FTE Jobs in the Bottom Three Wage Levels, by Industrial Sector, 1986



**The Effect of Industrial Restructuring on Wages**

Claims that the shift of employment from goods to services is creating polarization in the distribution of wages rest on several key assumptions. The first concerns industry-specific wage distributions and the differences between expanding and contracting industry sectors. Are the jobs in the service sector low-paying or high-paying? Not surprisingly they are a mix of both. The service sector comprises more than two-thirds of all jobs; it contains many very large and dissimilar industries. Data for 1986 (Charts 7 and 8) show the following:

- the public administration and health/education/welfare (and especially education) segments are characterized by a large number of high paying jobs; 45% and 38% of all jobs in these two sectors were in the top three wage levels in 1986 (paying $13.50/hour or higher) compared to 30% for the economy as a whole.
- Consumer services[17] is the lowest paying sector. Only 9% of all jobs were in the top three wage levels and 61% were in the bottom three wage levels (paying less than $8.00 per hour). Fully one third were in the bottom wage level (paying less than $5.25) compared to 12% for the economy as a whole.
- The remaining parts of the service sector -- distributive and business services -- are closer to the average for the economy as a whole though transportation and communications have a wage profile above the average.

Hence, whether the shift to services tends to lower wages will depend critically on which services are expanding.

What of jobs in the goods-producing sector where employment has been in decline. Are jobs here clustered in the middle of the wage distribution as the "declining middle" theorists suggest? To answer this question we divided the goods sector into three groups: 1/ natural resource and natural-resource based industries;[18] 2/ manufacturing; and 3/ construction.

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[17] See Appendix A for a list of industries in each sector.

[18] In addition to forestry, fishing and mining we included resource dependent industries including wood processing, paper and allied, primary metal, petroleum coal and utilities

- the natural resource sector is the highest paying in the economy with 53% of all jobs in the top three wage levels and only 13% of jobs are in the bottom three levels.
- Jobs in manufacturing are indeed clustered in the "middle" with fewer jobs in the bottom or the top of the wage distribution than in the economy as a whole.
- Wage rates in construction tend to be somewhat higher than average with 36.8% of all jobs in the top three levels and 21.7% in the bottom three.

All three goods sectors declined in their share of employment in the 1981-86 period so that assuming jobs losses are proportionately distributed across wage levels we could expect this to result in some decline in middle and even higher paying jobs. All parts of the service sector increased their share of employment with the exception of public administration. Growth was especially strong in the low paying consumer industries and the above average health, education and welfare industries. Overall, the service sector's share of full time equivalent jobs increased by almost 4 percentage points over this short period, rising from 66% to 70%. This is almost as much expansion as occurred in either the 1960s or 1970s. In principle, such shifts might account for the changing wage pattern but do they?

**Table 9. Percent Distribution of Full-time Equivalent Jobs by Major Sector, 1981-86**

| | 1981 | 1986 | Change in Share |
|---|---|---|---|
| Natural-Resources Based | 9.6% | 7.8% | -1.8% |
| Manufacturing (exc. resources) | 18.8 | 17.1 | -1.6 |
| Construction | 5.5 | 5.0 | -0.5 |
| Sub-total: Good-producing | 33.9 | 30.0 | -3.9 |
| Distributive Services | 12.4 | 12.7 | 0.3 |
| Consumer Services | 19.7 | 21.3 | 1.7 |
| Business Services | 9.7 | 10.2 | 0.5 |
| Sub-total: Commercial serv. | 41.8 | 44.2 | 2.4 |
| Health/Education/Welfare | 15.2 | 16.9 | 1.8 |
| Public Admin. | 9.2 | 8.8 | -0.4 |
| Sub-total: Non-commercial serv. | 24.4 | 25.7 | 1.3 |
| All services | 66.1 | 70.0 | 3.9 |

To answer this question we applied the decomposition procedure described in the appendix. The results (Table 10) indicate that there was some impact of industrial restructuring but that this effect was comparatively minor. On average, changes in industrial composition accounted for 13% of the total change in the wage distribution and only 11% of the growth in low wage jobs. These and other results reported in the footnote[19] are similar to those reported from comparable American studies (Lawrence, 1984; Tilly, Bluestone and Harrison, 1987). In sum, little of the shift in the earnings distribution is accounted for by the changing industrial mix of employment. Clearly other events were contributing far more to the change in job quality than the changing industrial structure of employment.

[19] Our analysis of earnings data for 1980 and 1985 from the Canadian census confirm and reinforce these results. Only 10% of the total change in the economy wide earnings distribution was accounted for by changing industrial composition. For the 1970-1980 period (again using census earnings distributions) we were able to account for 28% of the change among full time, full year workers.

Table 10. Industry-Based Decomposition of Change in the Wage Distribution, 1981-86 (FTE Jobs)

| Hourly Wage Level | Total Change in Share of Wage Distribution (PTj) | Change in Share Due to: Change in Job Mix Among Inds. | Change in Wage Dist. Within Ind. | Simultaneous Change in Both |
|---|---|---|---|---|
| 1. | 2.7% | 0.3 | 2.3 | 0.1 |
| 2. | -0.2 | 0.2 | -0.4 | 0.0 |
| 3. | -2.0 | 0.1 | -2.0 | -0.1 |
| 4. | 0.0 | 0.1 | -0.1 | 0.0 |
| 5. | -0.6 | 0.0 | -0.6 | 0.0 |
| 6. | -0.9 | 0.0 | -0.9 | 0.0 |
| 7. | 1.5 | -0.1 | 1.7 | -0.1 |
| 8. | -0.2 | -0.3 | 0.1 | 0.0 |
| 9. | 0.4 | -0.3 | 0.7 | 0.0 |
| 10. | -0.7 | -0.1 | -0.6 | 0.0 |
| Distribution of Total Change Across Factors* (P) | 100% | 13% i=1 | 84% 2 | 4% 3 |

* This measure is a rough indication of the average contribution (across all wage levels) of each component to the total change in the wage distribution.

Within each wage level (1 to 10) the contribution of each of the three factors (eg. change in job mix among ind.)is measured by the absolute value of impact of that factor on the distribution. In this calculation, magnitude is important but direction is not. Having determined the magnitude of a factor's contribution to change (in the earnings distribution) within each wage level, its contribution to the total change is determined by weighting its importance within a particular level by the amount of change which occured in that level. That is, if a factor (eg. the change in job mix) contributed 90% of all change within a level, but there was little change in the earnings distribution in that level, then the impact by that factor on the total change would be small.

The change in share averaged accross all wage levels due to a particular factor is calculated as follows: Let $P_{i,j}$ be the change in share done to factor i (eg. job mix among industries), in wage level j (j = 1,10). Let $P_{t,j}$ be the total change in share in wage level j (ie. 2rd column in the table). Then $P_{i,j}$ - the weighted average across all levels j of the change in share due to factor i (ie. 13% for factor 1) is

$$P_{i\cdot} = \sum_{j=1}^{10} \frac{|P_{ij}|}{\sum_{j=1}^{10} |P_{ij}|} \quad \frac{P_{ii}}{\sum_{i=1}^{3} |P_{ij}|}$$

The first factor is the weight.

## Changes in Occupational Structure

When we turn to the trends emphasized by the proponents of the "good jobs" scenario, the results are much the same. In the "good jobs" scenario emphasis is put on the expanding number of jobs in the managerial, professional and technical occupations which typically provide above average wages and salaries. The growth rate in managerial positions in particular outpaced most other occupations in this period increasing from 11 to 14 percent of FTE jobs. They also had the highest average hourly wage rate ($14.95) in 1986 compared to $11.48 for the economy as a whole. On the other hand, sales and service occupations, where wage rates are below average also experienced strong growth. As in the case of the expansion of the service sector, one sees growth in both high and low wage occupations, the kind of pattern that might explain the observed change in the economy-wide wage distribution. However, the results of our analysis of the effects of changes in occupational mix differed little from those reported for industry changes and we shall only briefly summarize them here.[20]

On average, changes in occupational mix accounted for 19% of the change in the economy-wide wage distribution. The shift in employment to low paying occupations (mainly sales and service) accounted for only 10% of the expansion in low wage jobs. By itself, the increasing share of jobs in high paying (mainly managerial) positions would have increased the share of jobs in the highest two wage levels by 0.8% but other events over-rode this movement and caused the share of jobs at the top to fall by this same amount, 0.8 percentage points.

As a final test, we simultaneously standardized on changes in the industrial mix and the distribution of occupations within industries. Together, these two factors accounted for 22% of the total change in the distribution of wage rates in jobs. All of these results proved to be robust irrespective of sex, age (though more on this below) or whether we considered all jobs or only those jobs held on a full time basis (i.e. the growth in part time employment has little to do with the changes observed here). This leaves us with a puzzle. Although changing industrial and occupational patterns of employment are having some impact on the wage distribution, that impact is minor relative to other things occurring in the economy. But just what are these "other things?" We do not claim to be able to answer this question. In the following section, however, we do provide an answer that situates the problem.

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[20] These results are reported in considerable detail in Myles, Picot and Wannell (1988).

**The McJobs Scenario: What's Wrong With It?**

A great deal of the popular (and academic) rhetoric surrounding debates over emergent wage patterns has been focussed on what could be called the McJobs scenario, the obvious fact that, in North America, low paying consumer services (where the fast food industry is located) have experienced unusually high rates of employment growth in recent years. Our analysis has shown that changes in industry and occupational composition explain only a modest amount of the total change in the shape of the wage distribution in general and of the growth in low paying jobs in particular. This clearly puts the usual version of the McJobs phenomenon into question. But just what is wrong with this scenario? We will argue that accounts emphasizing the growth of low wage consumer services as the "motor" behind the changing wage distribution of jobs mistake the symptom for the cause.

First, it would be an error to conclude that the low paying consumer service industries are irrelevant to our understanding of emergent wage patterns. The main conclusion to be drawn from our analysis is that the changing size of industries contributed only modestly to change wage patterns and that most change occurred within industry sectors. Among the most significant of these was the downward shift that occurred within consumer services. Here, the share of FTE jobs in the lowest wage level (paying less than $5.24 in 1986) rose from 22% in 1981 to 33% in 1986. Hence, the consumer services sector contribution to the net growth in low-paying jobs was not so much that its share of employment grew over the period (although it did), but rather that within the sector itself a much larger proportion of the jobs were very low-paying in 1986 compared to 1981. This provides a clue to the problem but only a clue.

A distinctive feature of the consumer service industries is the relatively large number of young workers employed there. In 1986 young workers (16-24) accounted for 35% of all FTE jobs in consumer services compared to 18% in the economy as a whole. At the same time, there was a decline in relative youth wages which displayed itself as a downward shift in wages in the consumer services sector. But this decline in relative youth wages was a characteristic of the economy as a whole not just consumer services. Among young workers, the share of jobs in the bottom two wage deciles increased by 13 percent in natural resources, 15 percent in manufacturing, 16 percent in construction, 13 percent in distributive services, 17 percent in consumer services, 7 percent in business services, 15 percent in health, education and welfare and 14 percent in public administration. Similar,

though more modest downward shifts were also noted among 25-34 year olds in all industry sectors, where most of the movement was out of higher into middle wage levels. In contrast, among older cohorts there was a general shift from lower to higher wage levels[21]. The declining relative wages of the young and increase in the relative wages older workers is illustrated in chart 9. We should highlight, moreover, that the distributions in Table 11 are calculated after excluding all part time jobs. We are not describing what has happened to part-time jobs held by students but to jobs held by those with a full-time commitment to the labour market. Further, these declines were observed for both sexes and in all regions of the country. Nor was the decline in youth wage rates confined to those with poor educational credentials: it affected post-secondary graduates as well as those who had not completed high school.[22]

In sum, the growth in low wage jobs is in large measure a consequence of lower relative (and real) wage rates paid to younger workers and growth at the top can be partly attributed to higher wage rates paid to older workers. The deterioration in job quality, as measured by growth in low wage employment, is not primarily a "McJobs" phenomenon. It is simply more visible in consumer services because of the concentration of young workers there.

[21] Similar trends were evident when we examined age-specific wage patterns within occupations.

[22] For a fuller account of these results see Myles, Picot and Wannell (1988).

CHART 9

PERCENTAGE CHANGE IN RELATIVE MEAN HOURLY WAGES BY AGE, 1981-86
THREE YEAR MOVING AVERAGE

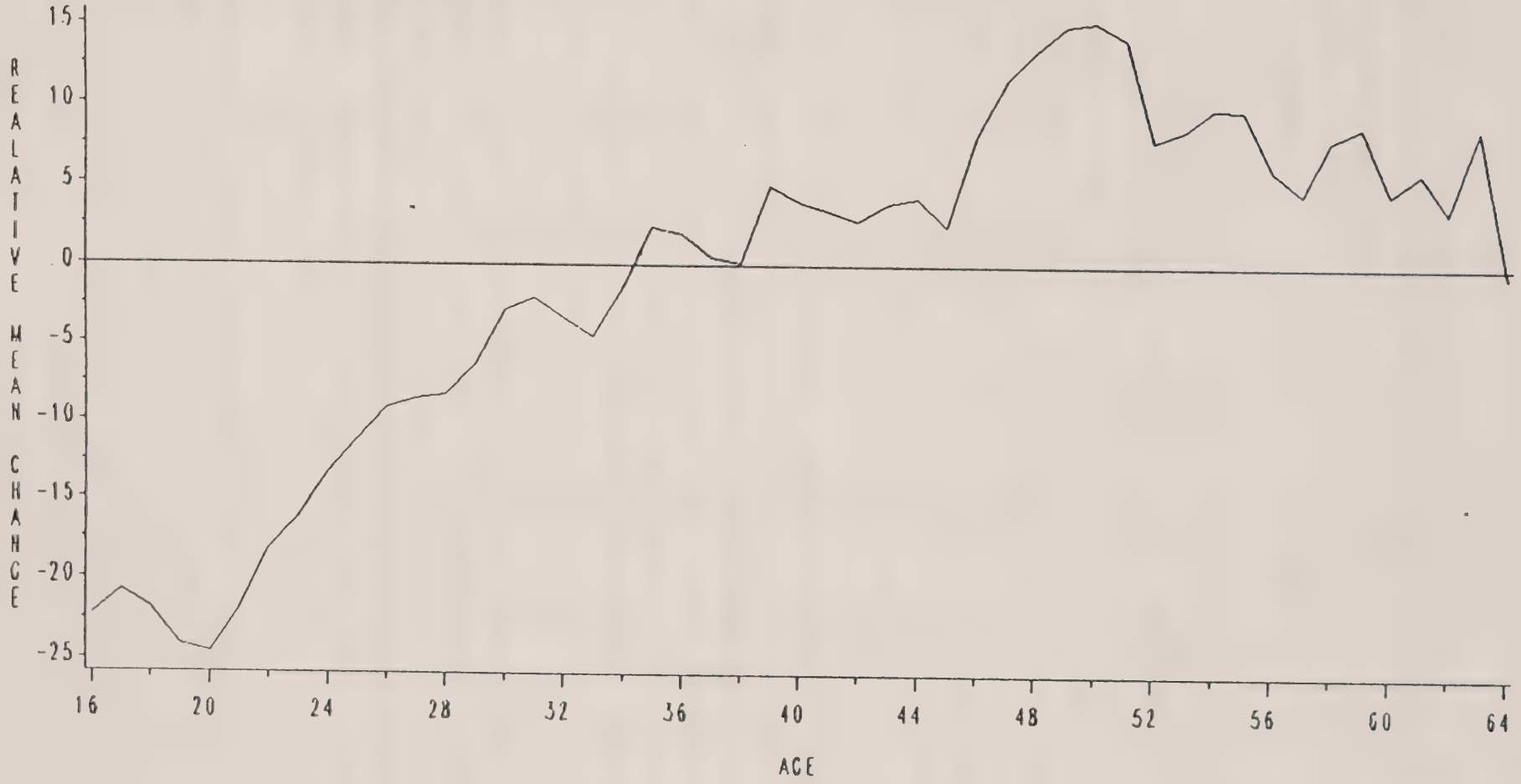

Table 11 CHANGE IN THE WAGE DISTRIBUTION OF FULL-TIME JOBS, BY INDUSTRY, AGE GROUP 16-24, 1981-86

| HOURLY WAGE LEVEL* | NATURAL RESOURCES | | MANUFACTURING | | CONSTRUCTION | | DISTRIBUTIVE SERVICES | |
|---|---|---|---|---|---|---|---|---|
| | WAGE DISTRIBUTION 1986 | CHANGE 81-86 | WAGE DISTRIBUTION 1986 | CHANGE 81-86 | WAGE DISTRIBUTION 1986 | CHANGE 81-86 | WAGE DISTRIBUTION 1986 | CHANGE 81-86 |
| 1 | 13.2 | 7.0 | 18.3 | 9.4 | 12.5 | 4.2 | 13.7 | 5.8 |
| 2 | 13.1 | 6.2 | 20.6 | 6.0 | 20.0 | 11.5 | 19.9 | 6.9 |
| 3 | 13.1 | 1.2 | 18.9 | 0.6 | 15.8 | 3.4 | 17.5 | -0.2 |
| 4 | 13.4 | 4.6 | 12.2 | -2.2 | 19.8 | 5.6 | 14.9 | 0.5 |
| 5 | 11.9 | 2.2 | 9.3 | -2.4 | 11.1 | -2.6 | 10.9 | -0.8 |
| 6 | 9.6 | 0.3 | 9.8 | -1.9 | 4.7 | -5.3 | 7.9 | -4.6 |
| 7 | 9.4 | -0.7 | 6.4 | -2.2 | 8.3 | 0.2 | 6.8 | -3.3 |
| 8 | 12.1 | -6.8 | 2.8 | -3.9 | 4.2 | -6.7 | 4.2 | -2.8 |
| 9 | 3.0 | -11.5 | 1.7 | -1.7 | 2.4 | -6.0 | 4.1 | 0.0 |
| 10 | 1.3 | -2.5 | 0.0 | -1.7 | 1.3 | -4.2 | 0.2 | -1.5 |
| | CONSUMER SERVICES | | BUSINESS SERVICES | | HEALTH/EDUCATION WELFARE | | PUBLIC ADMINISTRATION | |
| 1 | 47.7 | 19.7 | 11.4 | 1.7 | 19.2 | 8.0 | 21.5 | 12.6 |
| 2 | 21.0 | -3.0 | 20.4 | 5.4 | 17.5 | 6.9 | 10.5 | 1.1 |
| 3 | 11.6 | -4.7 | 25.3 | 2.5 | 12.3 | -2.9 | 12.6 | 0.6 |
| 4 | 8.9 | -2.4 | 22.7 | 3.8 | 12.0 | -2.2 | 17.6 | 4.2 |
| 5 | 3.9 | -3.5 | 9.3 | -3.3 | 11.4 | -3.6 | 11.8 | -7.5 |
| 6 | 3.2 | -0.9 | 5.7 | -4.1 | 11.7 | -0.7 | 11.2 | -4.0 |
| 7 | 1.5 | -1.1 | 3.2 | -0.5 | 8.2 | 0.4 | 6.9 | -1.6 |
| 8 | 1.1 | -1.5 | 1.0 | -1.9 | 6.7 | -0.3 | 3.7 | -2.2 |
| 9 | 0.7 | -1.4 | 0.3 | -2.8 | 0.5 | -4.0 | 3.7 | -2.1 |
| 10 | 0.5 | -1.2 | 0.7 | -0.7 | 0.6 | -1.6 | 0.6 | -1.2 |

What are we to make of these changes? Is the polarization between younger and older workers temporary or permanent? Is the decline in wage rates in the youth labour market indicative of a more general decline in job quality measured by other criteria such as the skill content of work or the quality of training being provided in entry level jobs? Or are new labour force entrants simply doing the same work for less pay?

There are two alternative scenarios neither of which lend themselves to easy adjudication with these or any other data. In one scenario, trends in the youth labour market reflect more general structural change in the organization of labour demand that are simply more manifest among new labour force entrants: two-tier wage contracts, more part-time employment, weaker unions, and outsourcing of production from work sites whose wage schedules are characterized by high means and low variances to suppliers with wage distributions having on average lower means and higher variances (Bluestone and Harrison, 1989). Slow productivity growth, declining real minimum wages and perhaps more job creation in small firms which pay lower wages may also be part of this restructuring. Such changes would work against a quick recovery of relative wages for younger workers.

The second scenario -- more optimistic for the young -- sees the decline in relative youth wages as related to high unemployment and low labour demand (combined with high labour supply) early in the decade. A decline in both relative and real wages allowed employment expansion to take place, helping to bring down the youth unemployment rate, which is now below the pre-recession (1981) level. In essence, there may have been a trade-off between wages and jobs over the early and mid 1980s. If this is the case, continued economic expansion and the related increase in labour demand might reverse the trend of the preceding decade.

This scenario sees wage changes as largely determined by a decline in the demand for the youth labour. Even though the size of the youth labour market has been declining since the late seventies, new cohorts entering the labour market have yet to realize the gains that might be expected from a dwindling youth labour supply because the labour market continues to be clogged up with the large cohorts now approaching middle age (Foot and Li, 1988). In this more positive scenario, youth wages can be expected to recover in the near future.

To determine which of these two scenarios best represents the actual situation requires both new and better data and sufficient passage of time for these processes to work themselves out. Such a conclusion, however, brings us full circle to the underlying question of a trade-off between the quantity and quality of jobs. Relative to the European experience, younger workers in Canada did benefit from high levels of job creation in the 80s. By 1986, youth unemployment rates had fallen back to pre-

recession levels while in Europe unemployment rates among younger workers remained high despite recovery. However the trade-off for younger Canadian workers was a substantial deterioration in wages levels. This also suggests that wage flexibility in Canadian labour market in the recent post is a reality -- but is concentrated largely in the youth labour market and for entry level jobs.

**III. Working Time, Wage Rates and the Distribution of Earnings**

Like the distribution of wage rates, earlier studies by Statistics Canada analysts (Van Cleef, 1985; Gower, 1986) have indicated that patterns of working time have also been polarizing. Van Cleef (1985) found that while average working hours fell from 39.0 in 1976 to 37.8 in 1984, more Canadians were working both longer and fewer hours and fewer were working what could be considered "normal" full time hours. The rise he noted in part-time work (from 12.4% in 1976 to 16.4% in 1984) came as no surprise. However, the fact that the share of employees working unusually long hours -- more than fifty hours per week -- was also rising was not well known. The result was that the proportion working "normal" full-time hours (30-49 hours per week) fell from 75.9% in 1976 to 71.3% in 1984. In a follow-up study Gower (1986) showed that it was those with higher educational credentials -- and presumably working at higher wage rates as well -- whose working time was increasing the most.

The distribution of earnings, (of all workers, not just full-time full year) as we have noted, is the product of the wage rates paid in jobs and the hours worked in those jobs. In theory, trends in one could offset trends in the other. Workers who find themselves in the growing number of low wage jobs may be inclined to work longer hours to compensate. Similary, persons in the expanding number of higher paying jobs may choose to "buy" more leisure by working fewer hours but the emerging trends fit neo-classical predictions: leisure time is more expensive for highly paid workers, so they "buy" less. The results of the Van Cleef and Gower studies, however, would suggest the opposite is true: more highly paid workers have also been working longer hours, accentuating earnings polarization. The Labour Market Activity Survey (LMAS) data base allows us for the first time to clearly separate the two components of earnings and enables us to establish whether this suspicion is correct. This is because annual earnings, hours worked in jobs and hourly wage rates are available in the 1981 Work History Survey and the 1986 LMAS .

In Chart 10 we have placed each of the 10 earnings levels into one of four quadrants based on changes in both relative wages and relative annual hours worked. The earnings levels in the lower left had quadrant (notably levels 1 to 4) had both lower relative hourly wages and fewer relative hours worked in 1986 compared to 1987. Those in the upper right hand quadrant (notably 8 to 10) had both higher relative wage rates and worked longer relative hours. The resulting pattern shows that changes in earnings in the bottom four earnings levels (numbered 1 to 4) were the result of both lower wages and fewer hours worked. Conversely, earners in the top three levels (numbered 8 to 10) had both higher relative wages and worked longer relative hours in 1986 compared to 1981. In brief, changes in patterns of working time compounded, rather than offset, changes in the distribution of wage rates.

If changes in the relative supply of and demand for workers is responsable for the polarization of the earnings distributions, then it is perhaps not surprising that one is seeing change in the same direction in both quantity (hours worked) and price (wages paid). There has been some movement in both quantity provided and price paid for labour at the bottom and top of the earnings distributions.

To determine how much of the change could be attributed to changing wages and changing hours for each earnings level we turn to the decomposition procedure again. The change in any given earnings level is the product of:

1/ the changing share of workers being paid at a given wage rate (labelled the "wage effect" in Table 12)

2/ changes in the hours worked within a given wage rate category[23] (labelled the "hours effect" in Table 12)

A third factor, the "interaction" between 1/ and 2/ which cannot be uniquely apportioned to either is also shown in Table 12.

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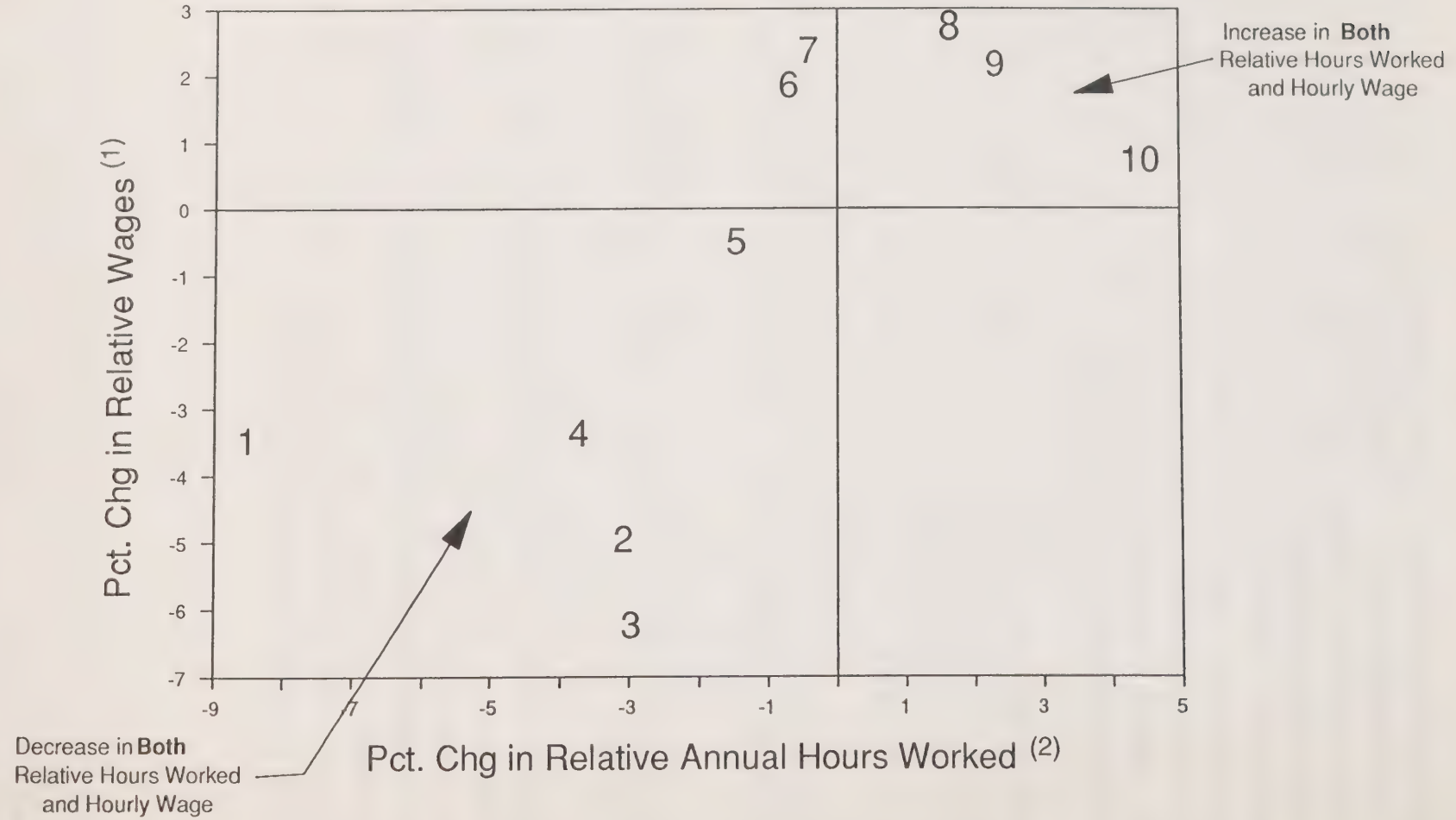
[23] The decomposition technique allows us to differentiate between changes in the earnings distribution that result from (a) changes in the distribution of earners across wage levels and (b) changes in the distribution of earnings within wage levels. Our assumption is that most of the change in earnings within wage levels (ie. factor (b)) results from changes in hours worked. We hasten to point out, however, that some of the change in earnings that the attribuate to changes in hours worked could be due to a shift in the percent of earners near the bottom of a given wage category to the top of the wage category. Such effects are likely to be trivial when the distance between the boundaries defining a wage level is small but potentially important when the distance is large. It is likely for example, that our estimates exaggerate the "hours effect" at wage level ten which is an open ended category that includes all wages higher than $19.41 per hour in 1986.

## Chart 10: Change Between 1981 & 1986 in Relative Wages and Relative Hours Worked for Each of 10 Earnings Categories




Note: The number on the chart indicates the earnings category, with 1 being the lowest, 10 being the highest.

(1) % change in the relative mean hourly wage paid within each of the 10 earnings categories.
(2) % change in the relative mean annual hours worked within each of the 10 earnings categories.

The results indicate the following:

(1) Changes in wage rates and hours worked contributed about equally to the overall change in the distribution of earnings. Of the total change in the earnings distribution between 1981-86, 41% was due to the change in the 10 level hourly wage rate distribution of workers, and 50% due to change in the earnings distribution within the wage rate category (the hours worked effect).

(2) Furthermore, both the change in the wage rate distribution and the change in in hours worked contributed to the polarization in the earning distribution. In boths cases, there is a decline in the middle of the distribution and growth at the bottom and the top.

(3) While both factors led to polarization, declining wage rates accounted for more of the shift into the bottom of the distribution than declining hours worked. In contrast, the increase in hours worked accounted for a larger share of the change at the top than the increase in wage rates.

**Table 12. Decomposition of the Change in the Earnings Distribution, 1981-86, SWH/LMAS Data Sources**

| | Total Change in Earnings Distribution 1981-86 | Change in Share Due to: (1) The "Wage Effect"[2] | (2)The "Hours Effect"[2] | Interaction Term. |
|---|---|---|---|---|
| Earning Levels | | | | |
| 1. | +1.2 | +0.9 | +0.2 | +0.1 |
| 2. | +0.8 | +0.3 | +0.6 | -0.1 |
| 3. | 0.0 | +0.1 | 0.0 | -0.1 |
| 4. | -0.1 | -0.2 | +0.2 | -0.1 |
| 5. | -1.8 | -0.7 | -1.3 | +0.2 |
| 6. | -1.3 | -0.8 | -0.5 | 0.0 |
| 7. | -0.2 | -0.2 | 0.0 | 0.0 |
| 8. | -1.2 | -0.1 | -1.1 | 0.0 |
| 9. | +0.1 | +0.3 | -0.1 | -0.1 |
| 10. | +2.6 | +0.5 | +2.0 | +0.1 |
| Percent of Overall Change accounted for by the factor[1] | | 41% | 50% | 9% |

(1)A weighted average of the percent change accounted for by the factor at each of the 10 levels, the weight being the amount of change in the level. See Table 8[24].

(2)Change due to change in the distribution of workers among the 10 wage rate categories.

(3)Change due to change in the earnings distribution within each wage rate categories.

[24] The hourly wage rate for an individuals in a given year is the weighted average of hourly wages paid in all jobs held during the year, where the weight is time worked. For both the wage rate and earnings distributions, decline are determined in 1981 and the boundaries of the deciles inflated for 1986 using the change in the median wage rate or annual earnings. The change in the share of individuals in each of the ten levels is then computed.

## Conclusion

The earnings distribution for full-time, full-year workes has become more polarized since the late 1960s. After accounting for the changing age and sex composition of workers, polarization was still observed during the 1967-73 and 1981-86 periods. During the 1970s, all of the increase at the bottom of the earnings distribution was due to a combination of the gender gap in earnings and the increased share of women in the labour force.

Polarization in earnings continued and if anything accelerated in the 1980s. Demographic effects were less pronounced during this period than previously and, hence, even net of demographic changes, polarization in the earnings distribution for full-time, full-year workers was significant during the period.

The changing industrial and occupational mix of jobs, (ie. shift to services and to managerial/administrative jobs) explained little of the total change observed in the wage distribution in the 1980s. Rather, the increase in the share of the jobs at the bottom of the earnings distribution is related mainly to declining relative wages among the young. This decline was observed in all regions of the country, among men and women, and within all industrial and occupational groups. Whether the relative wages of youth recover depends on whether the changes are related to relatively temporary events - such as changes in the supply of labour due to the baby boom and the cyclical effect on the demand for labour - or whether there are longer-term structural changes which resulted in the decline.

## Appendix A

### Definitions of Eight-Industry Sectors

| | 1980 SIC Codes |
|---|---|
| 1) Natural-Resource Based* | |
| Forestry | 041-051 |
| Fishing/trapping | 031-033 |
| Metal mines | 061 |
| Mineral fuels | 063-071 |
| Non-metal mines | 062 |
| Quarriers and sand pits | 081-082 |
| Services to mining | 091-092 |
| Wood industries | 251-259 |
| Paper and allied | 291-299 |
| Primary metals | 361-369 |
| Petroleum and coal | 491-499 |
| Electric power, gas, water | |
| (2) Manufacturing (excluding Natural resource Based) | |
| Food and beverage | |
| Tobacco products | |
| Rubber and plastics | 121-122 |
| Leather | 151-169 |
| Textile | 171 |
| Knitting mills | 181-199 |
| Clothing | N.A. |
| Furniture and fixtures | 243-249 |
| Printing and publishing | 261-269 |
| Metal fabricating | 281-284 |
| Machinery | 301-309 |
| Transportation equip. | 311-319 |
| Electrical products | 321-329 |
| Non-metallic mineral prod. | 331-339 |
| Chemical and chemical products | 351-359 |
| | 371-379 |
| (3) Construction | 391-399 |
| General contractors | |
| Special trade contractors | 401-442 |
| Services to construction | 421-429 |
| | 441-449 |

**Table Definitions of Eight-Industry Sectors (cont'd)**

| | 1980 SIC Codes |
|---|---|
| (4) Distributive Services | |
| Transportation | 451-461 |
| Storage | 471-479 |
| Communications | 481-484 |
| Wholesale trade | 501-599 |
| (5) Consumer Services | |
| Retail trade | 601-692 |
| Amusement and recreational services | 961-969 |
| Personal services | 971-979 |
| Accomodation and food | 911-922 |
| Miscellaneous services | 982-999 |
| (6) Business Services | |
| Finance industries | 701-729 |
| Insurance carriers | 731-733 |
| Insurance/real estate | 751-761 |
| Services to business management | 771-779 |
| (7) Health/Education/Welfare | |
| Education and related | 851-859 |
| Health and Welfare | 861-869 |
| Religious org. | 981 |
| (8) Public Administration | |
| Federal admin. | 811-812 |
| Provincial admin. | 822 |
| Local admin. | 832 |
| Other gov't | 841 |

* The analysis is of the non-agricultural economy; hence, agriculture has been excluded.

The Goods-Producing Sector includes the natural resource-based industries, manufacturing and construction. The remainder are in the Services sector.

**Appendix B**

## THE DECOMPOSITION TECHNIQUE

For purposes of demonstration, the decomposition of the change in the wage distribution into that due to the changing industrial mix and the changing wage distribution within industries is described.

The algebra of the technique is outlined below but the approach is basically quite straightforward. The total change in any level of the wage distibution (say the lowest level, which increased its share by 2.7 percentage points between 1981 and 1986) is decomposed into three factors:

(1) that due to the change in the distribution of full-time equivalent jobs among the eight sectors between 1981 and 1986, holding the wage distribution within sectors constant;

(2) that due to the change in the wage distribution within the eight sectors holding the distribution of jobs among sectors constant; and

(3) an interaction term, which accounts for the proportion of change due to simultaneous change in both the wage distribution within sectors and the distribution of jobs among sectors. This term is usually fairly small compared to (1) and (2).

This method is mechanical, in that some distributions are held constant while others are allowed to change. This of course does not occur in reality. Nonetheless, the technique allows a decomposition of the change in a distribution which is quite instructive.

Let $X_{ijt}$ denote the number of full-time equivalent jobs in industry i, wage level j in year year t.

$X_{.jt}$ denote the number of jobs in industry i, wage level j.

$X_{..}t$ denote the total number of FTE jobs in year t.

Then let $W_{ijt} = X_{ijt} / X_{i.t}$ denote the proportion of all jobs in industry i and year t that are in wage level j.

and

$I_{it} = X_{i.t}$ be the proportion of all jobs in year t that are in industry i and

$P_{jt} = X_{.jt} / X_{..t}$ be the proportion of all jobs in year t that are in wage level j.

Let $\Delta P_j$ denote the change in the proportion of jobs in wage level j between 1981 and 1986.

Then $\Delta P_j = P_{j86} - P_{j81}$ and note that $\sum \Delta P_j = 0$ but $P_{jt} = X_{.jt} / X_{..t}$ which can be expressed as:

$$P_{jt} = \sum_{6} ((X_{ijt} / X_{i.j}) (X_{i.t} / X_{..})) = \sum_{6} W_{ijt} I_{it}$$

Hence $$P_j = \sum_i W_{ij86} I_{i86} - \sum_i W_{ij81} I_{i81}$$

but $W_{ij86} = W_{i81} + \Delta Wij$

Hence $$P_j = \sum_i (W_{ij81} + \Delta W_{ij}) )I_{i81} + \Delta I_i) - \sum_i W_{ij81} (I_{ij81})$$

Multiplying out and collecting terms gives

$$\sum_i W_{ij81} \Delta I_i \quad + \quad \sum_i \Delta W_{ij} I_{i81} \quad + \quad \sum_i \Delta W_{ij} \Delta I_i$$

component due to change in distribution of jobs among industries

component due to change in wage distribution within industries

component due to change in both or interaction term

The above formula decomposed the change in each individual wage level, of which there are ten. To provide a single measure of the results of the decomposition across all 10 levels, the following approach is used.

All change in shares (e.g., $P_j$, $I_i$, $W_{ij}$, etc) are incorporated in the measure as absolute values, where the signs are ignored.

Each of the three components' contribution to the total change in share is the weighted average across all wage levels of its contribution in each level. The weights are the absolute value of the total change in share in each wage level.

It is calculated as follows: Let $P_{i,j}$ be the change in share due to component i (e.g., job mix among industries) in wage level j. Let $P_j$ be the total change in share in decile j. Then $P_{i.}$, the weighted average across all levels j of the change in share due to component i is:

$$P_{i\cdot} = \sum_{j=1}^{10} \frac{|\Delta P_j|}{\sum_{i=1}^{10} |\Delta P_j|} \frac{|P_{ij}|}{\sum_{i=1}^{3} |P_{ij}|}$$

The first term in the summation is the weight.

**References:**

Bluestone, Barry and Bennet Harrison. 1989. "Increasing inequality and the proliferation of low-wage employment in the U.S." Boston University: mimeo.

Foot, D.K. and J. C. Li, "Youth unemployment; A Reply" Canadian Public Policy, Vol X1V, No 1, 1988.

Gower, D. Characteristics of Persons with Long Workweeks The Labour Force, Statistics Canada Catalogue #71-001, Sept. 1986.

Harrison, Bennett and Barry Bluestone. 1988. The Great U-Turn: Corporate Restructuring and the Polarizing of America. N.Y.: Basic Books.

Lawrence, R.T., Sectoral Shifts and the Size of the Middle Class, Brooking Review, Fall 1984

Kosters, M.H. and M.M. Ross, "A Shrinking Middle Class?" The Public Interest, #90, Winter 1988.

Kuttner, R., "The Declining Middle" The Atlantic Monthly, July, 1983

Loveman, Gary and Chris Tilly. "Good jobs or bad jobs: what does the evidence say." New England Economic Review, (Jan./Feb.1988): 46-65.

Myles, J, Picot G and T. Wannell, Wages and Jobs in the 1980s: Changing Youth Wages and the Declining Middle, Research Paper #17 Analytical Studies Branch, Statistics Canada, 1988.

Norwood, Janet, "The Job Machine has not Broken Down," New York Times, Sunday, Feb 17, 1987.

Van Cleef, D. Persons Working Long Hours, The Labour Force, Statistics Canada Catalogue #71-001, May 1985.

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